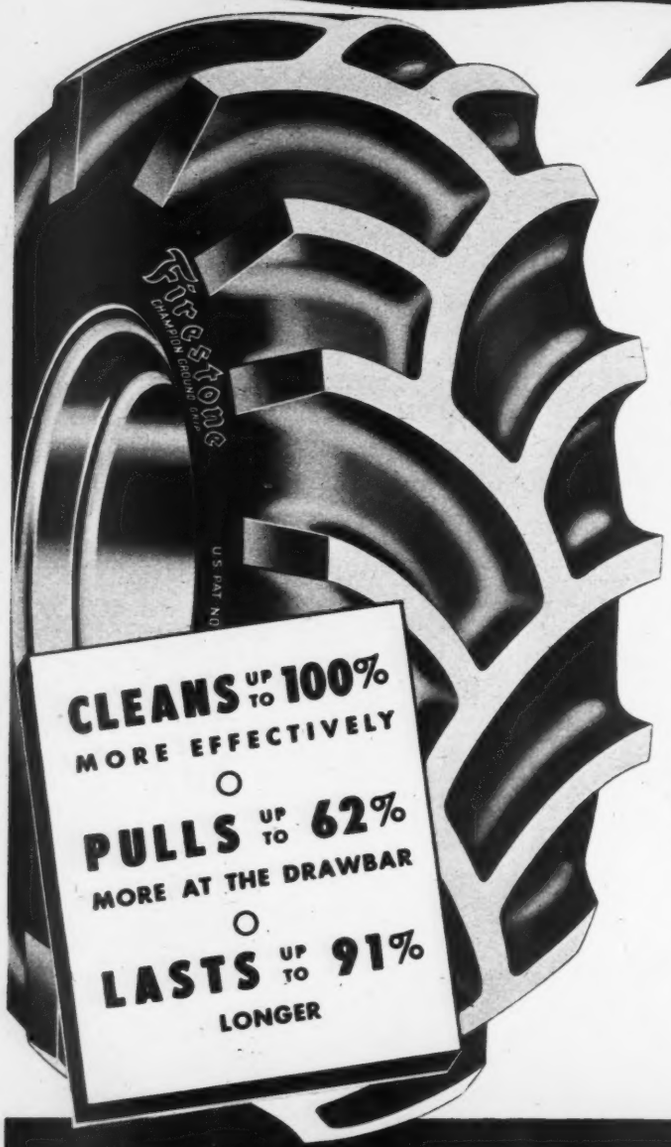
American FRUIT GROWER

DECEMBER 1946

This NEW PATENTED Firestone CHAMPION GROUND GRIP

OUT CLEANS - OUT PULLS - OUT LASTS

Any Other Tractor Tire



IN HUNDREDS of field tests, the new Firestone Champion Ground Grip has proved that it cleans up to 100% better, pulls up to 62% more, lasts up to 91% longer and gives a smoother ride than any other tractor tire. No broken center tire can duplicate this performance because the Ground Grip tread is patented.

The Champion's curved bars flare outward from the center to give a wider exit for mud and trash. It has no slots or broken bar stubs around which dirt and trash can pack. Its pyramid-type bars cut deeply into the soil with wedge-like action. Connected bars take a powerful "Center Bite" right in the heart of the traction zone.

The extra high bars on the Champion are Triple-Braced so they don't bend or break. They can't push through the cord body and make the tire unfit for retreading. The Champion's wider area of contact with the ground, and the continuous curved bars on which the load is carried, give better roadability.

Specify Firestone Champion Ground Grips when you order tires or a new tractor. They cost no more.

For the best in music, listen to the "Voice of Firestone" Monday evenings over NBC network

Copyright, 1946, The Firestone Tire & Rubber Co.

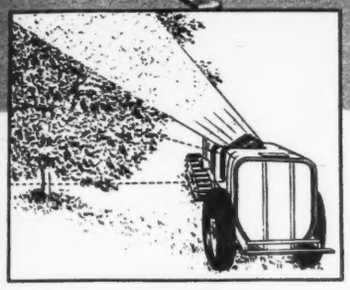
Greatest Advancement in Power Farming Since Firestone Put the Farm On Rubber

Entered as second-class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

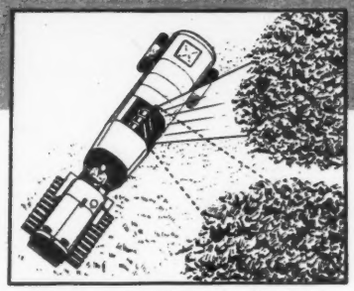
CHAMPIONSHIP PERFORMANCE

in speed, coverage and easy handling!

the new **Silveraire**



Automatic up-and-down movement of nozzle manifold, and new air-blast principle, assure penetration and complete, effective coverage.



Handy push button directs spray automatically to trees when approaching and leaving them. Means more thorough application, prevents waste of spray material between trees.

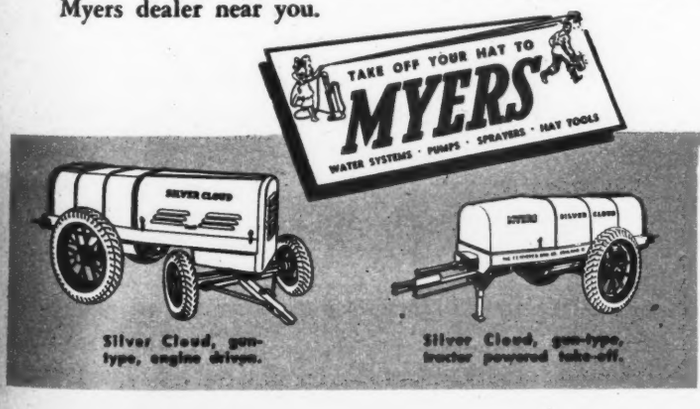
"Watch Myers Silveraire!" That was the word that went out as more Silveraire's went into action this year. And while growers watched, the Silveraire wrote a new chapter that will shape the future of orchard spraying. Note the many outstanding features described and listed here, then get full information from your Myers dealer.

Complete Line of Famous Silver Clouds

Includes tractor-powered and engine-driven models with capacities from 6 to 50 gallons per minute and pressures up to 800 pounds. See them! Inspect the efficient, improved pumps and the many matchless features in this popular line. Ask the Myers dealer near you.

Silveraire's ALL-STAR Combination of Features

- Air-blast principle
- Fast, complete coverage
- One-man operation
- Easy handling on wet, soft ground
- Low first cost
- Low operating cost
- Corrosion-proof tanks — and many other advantages resulting from advanced design and construction.



Silver Cloud, gun-type, engine driven.

Silver Cloud, gun-type, tractor powered take-off.

THE F. E. MYERS & BRO. CO., Dept. G-89, Ashland, Ohio

Send free literature on items checked below.

☐ Power Sprayers ☐ Power Pumps ☐ Water Systems
☐ Hand Sprayers ☐ Hand Pumps ☐ Hay Unloading Tools
☐ Care and Maintenance of Pumps and Water Systems

NAME_____

STREET_____ TOWN_____

STATE_____ COUNTY_____ R.F.D._____

Growers Report New DDT Sprays Cut Cause of Greatest Losses

THE CODLING moth is on the way out as the greatest single cause of loss to apple growers, it is indicated by results obtained with DDT in 1946.

DDT far outstrips all previous sprays on two counts, say most users:

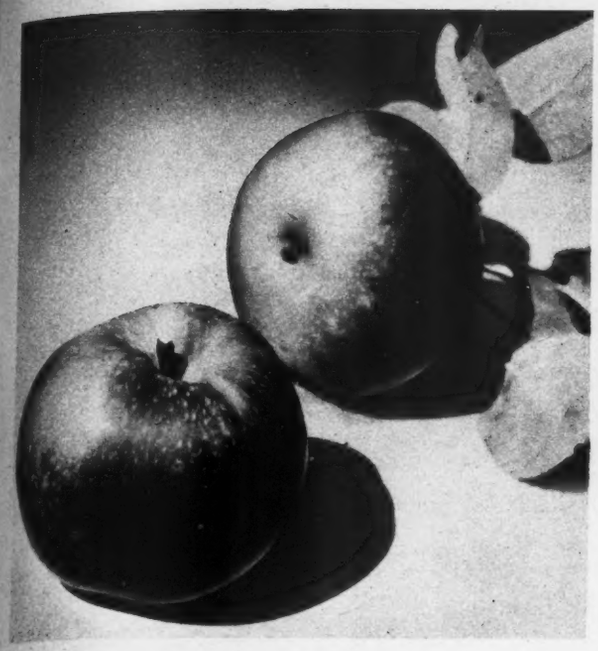
1. Control of worms in many cases is almost 100 per cent complete with very few stings on the rest of the fruit.

2. There are instances when fewer cover sprays were needed than with previous spray programs.

In many instances, growers in heavily infested areas insist that DDT has literally put them "back in the apple business." After years in which codling moth infestations had built up to ruinous proportions despite continued spraying with other materials, a number of growers report that DEENATE DDT, prepared by the Du Pont Company, finally brought the moth under control. This was accomplished with a reduced number of cover sprays.

Experience is also revealing a number of other advantages resulting from use of DEENATE DDT. Fruit is not only free from worms and stings but also seems to be of better color and size, probably due to lighter spray residues with resultant healthier foliage.

Residue tolerance and toxicity, at one time matters of considerable concern, are now considered to be less serious. In fact, with normal spray



BETTER, HEALTHIER COLOR this year after DEENATE DDT spraying for codling moth is generally attributed to the reduction in heavy spray deposits necessary with previous spray programs. Size of the fruit is also reported as improved, probably due to the healthier condition of the foliage.

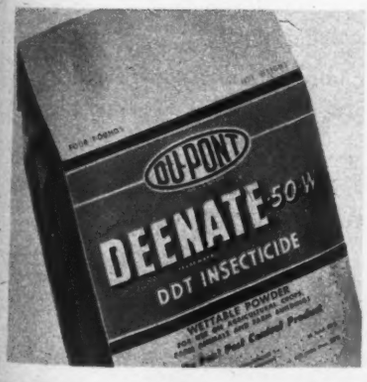
FOLIAGE on DEENATE DDT sprayed trees is reported as remaining soft, pliable and very dark green during the season. Excellent terminal growth is also considered the result of the lighter DEENATE DDT spray deposits that do not smother the trees.

programs, DEENATE DDT can be expected to meet tolerance requirements.

Growers who want to improve their control of codling moth with DEENATE DDT sprays can obtain advice through technical servicemen and regional offices maintained by Du Pont throughout the country.

Inquiries about the use of DEENATE DDT or chemicals to meet other pest control problems should be addressed to The Du Pont Company, Grasselli Chemicals Department, at any of the following addresses: Wilmington 98, Delaware . . . El Monte, California . . . Taylor Way and Lincoln Ave., Tacoma, Washington.

FLIES AND MOSQUITOES disappeared around the buildings even though spraying of DEENATE DDT was confined to the orchard. DEENATE 50-W, the type of DDT generally used on fruit trees, is also ideal for use in most farm buildings to provide complete control of these insects.



DEENATE DDT is available in four types for direct farm use: DEENATE 50-W (50% DDT wettable powder); DEENATE 25-W (25% DDT); DEENATE 25-R (25% DDT emulsifiable oil) and DEENATE 10-X (10% DDT ready-to-use dust).

DU PONT PEST CONTROL PRODUCTS

DEENATE DDT is one of the newest members in the family of dependable Du Pont Pest Control Products which include:

INSECTICIDES: DEENATE* DDT, GRASSELLI* Lead Arsenate, NUREXFORM* Lead Arsenate, Basic Lead Arsenate, Calcium Arsenate, Paris Green and Oil Sprays.

FUNGICIDES: COPPER-A Compound, ZERLATE,* FERMATE,* SULFORON,* SULFORON X,* Bordeaux Mixture, Lime Sulfur, Flotation Sulfur Paste.

OTHER MATERIALS: 2,4-D WEED KILLER, AMMATE* Weed Killer, Du Pont Spreader-Sticker, Special Dust Mixtures, KRENITE* Dinitro Spray.

*Reg. Trade Mark of E. I. du Pont de Nemours & Co. (Inc.)

DU PONT
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BETTER THINGS FOR BETTER LIVING
. . . THROUGH CHEMISTRY

"Lots of Hills and Mud-Puddles

. . . but our outfits go anywhere"

Frank Penstone & Sons, Pittsfield, Illinois

Carl Penstone on the deep-cushioned seat of their "Caterpillar" Diesel D4 Tractor. Standing is his father, Frank Penstone, Pittsfield, Illinois.

Located on bluffs close to the Illinois and Mississippi Rivers, the 250-acre orchards of Frank Penstone & Sons have soil, climate and topography in their favor — to make their Willow Twig, Red Delicious, Winesap, Golden Delicious, Grimes Golden and Jonathan apples thrive.

But their steep land, which drains air well, and gets ample rainfall, could often complicate their problems of producing clean fruit — and getting it harvested on time. "Could" — except for the Penstones' quartet of "Caterpillar" track-type Tractors.

"They never have quit on us or failed us", states Frank Penstone. "Lots of times we go through water a foot deep. We have lots of hills and mud-puddles. The D2, for example, will pull our 500-gallon Speed Sprayer anywhere. We spray at fourth speed with this rig. Several times, their traction has saved the quality of our apple crops.

"We built our ponds to supply overhead storage tanks with 'Caterpillar' equipment. These tractors often haul our crop out when it's too muddy for trucks — just as they pull our 'invasion barge' type of brush burner over soft going. Only track-type tractor power can do our work on time."

And only "Caterpillar" builds with 40 years of track-type tractor experience!

CATERPILLAR TRACTOR CO., PEORIA, ILL.

Caterpillar

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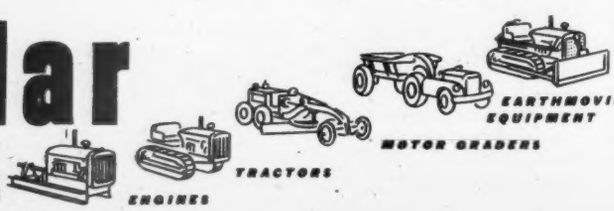
DIESEL



ENGINES TRACTORS MOTOR GRADERS EARTHMOVING EQUIPMENT

Now releases

VAPOTONE

INSECT SPRAY

The new organic insecticide that has been giving such spectacular results against

RED SPIDER . . . APHIS

and many other insects

★ Developed by ORTHO research

Tested in fields, orchards, nurseries — on vegetables, fruits and ornamentals — under glass, lath and in the open.

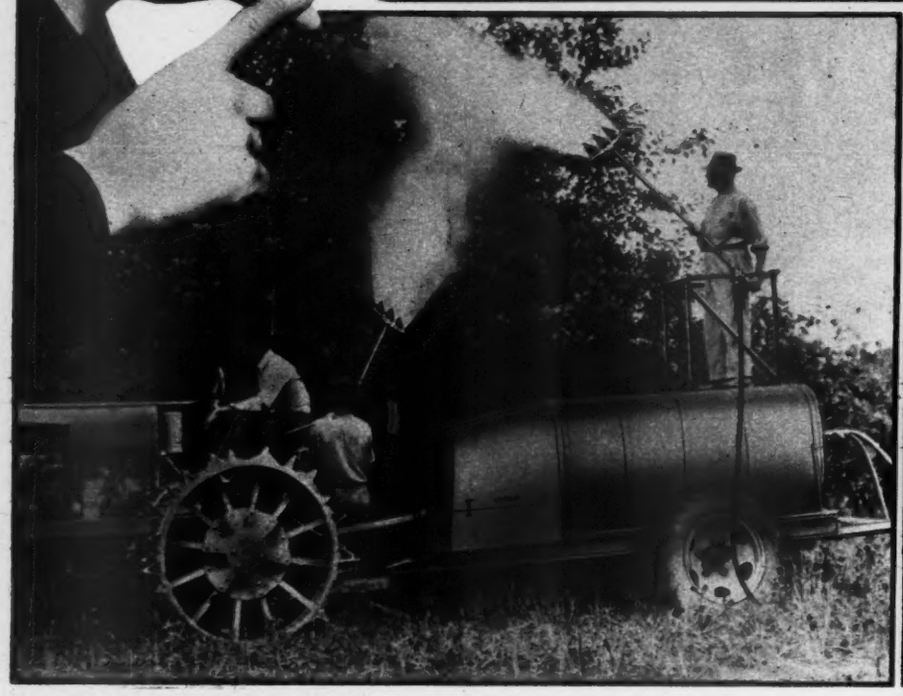
Tested North, South, East and West by ORTHO and by many impartial agricultural authorities.

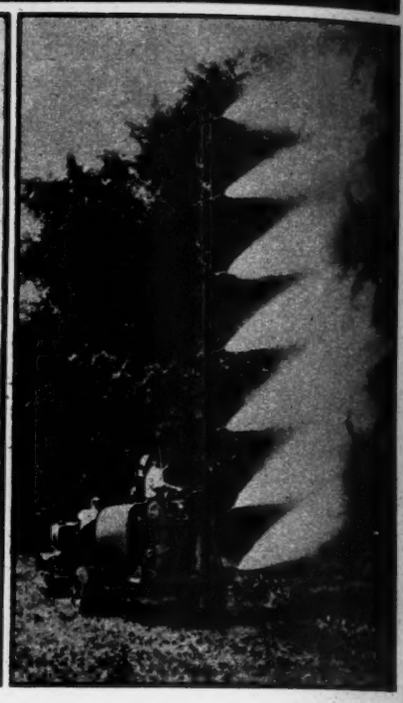
VAPOTONE has already established itself in pest control programs. Write for further details.

CALIFORNIA SPRAY-CHEMICAL CORP.

Richmond, California • Elizabeth, New Jersey • Orlando, Florida
Portland, Oregon

Only a "FRIEND" gives you these 5 advantages





The Simplest Pump—only ½ to ⅓ as many moving parts as other pumps built for high-pressure spraying. No wear on the cylinder walls.

Complete Lubrication of all moving parts, including the plungers.

No Bearing Troubles—because there isn't one plain bearing on a "Friend" Pump. All roller bearings.

"Instant-Clean" Valves on threadless seats. Just loosen one hex-head screw, and the valves comes right out.

You Never Spray with a Leaky Pump. The "Friend's" packing is taken up instantly by a slight turn of the adjustment screw.

Have you ever used a "Friend" Spray Pump? Until you do—

it is hard to realize what an immense improvement the "Friend" will make in your spraying.

The reasons for the "Friend's" far better performance are clear, when you study the pump design.

Then talk to some growers *who have used the 3 leading makes of sprayers side-by-side.*

You will hear that "The lack of breakdowns or repairs with a 'Friend' is phenomenal" . . . "For working efficiency and dependability, the 'Friend' is beyond comparison" . . . "The most reliable piece of machinery I have ever owned."

FRIEND MANUFACTURING CO., Gasport, N. Y.

"Friend" Sprayers are built in all chassis styles: Tractor trailers, truck sprayers, cutunders, engine-driven trailers, etc. Complete range of sizes. Pressures up to 1,000 lb. Also—

Dusters with the Reliability of "Friend" Sprayers.

Sizers and Cleaners for every requirement.

Easiest to Maintain in Working Order--
Fewest Moving Parts
"FRIEND"

For Richer Soil and Greater Yields

TILL . . . PLANT . . . CULTIVATE — WITH ROTOTILLER*

Gardening can be easier—and far more profitable —when you use a Rototiller power tiller. Here's a machine that takes the drudgery out of every operation it performs. Its powerful 5-horsepower engine does the hard work . . . all you do is guide and control. Its rotary tilling action restores fertility to the soil just as Nature does—*only much faster.* When you prepare a seedbed or cultivate a crop with Rototiller,* weeds are completely destroyed. Swiftly rotating tines tear up weeds and cover crops and mix them thoroughly with the pulverized soil. This enriches the soil, makes it more moisture-retaining. The planting attachment is adjustable to any planting pattern. Ask your Frazer dealer about Rototiller, Power Tiller of a Hundred Uses.

FRAZER FARM EQUIPMENT

ROTOTILLER
Trade Mark Reg. U. S. Pat. Off.
*Power Tiller of a Hundred Uses

GRAHAM-PAIGE MOTORS CORPORATION
WILLOW RUN, MICHIGAN

QUICK PROTECTION for BIG ACREAGES With the "SPEED SPRAYER"

This Big-Volume High-Capacity Sprayer Protects 50 to 75 Acres a Day... And Does a Thorough Spraying Job as it Goes.

"Speed Sprayers" for 1947 are super pest fighters ... fast, efficient, economical. New axial-flow fan moves tremendous volume of air at medium velocity ... moves air out of tree and replaces with saturated fog of crop-protecting spray material. All controls handy for one-man operation ... quick-change from one-way to two-way discharge. For speed, thoroughness of coverage, efficiency and economy of operation — the "Speed Sprayer" is the answer.

Look at These Features

Model Thirty-Six (illustrated above) has a 36" axial-flow fan powered by 110 HP 6-cylinder engine, insuring quick, thorough coverage. Engine is mounted at front for greater accessibility and protection from spray material. 500-gallon all-steel, corrosion resistant tank is centered over axle so sprayer is always in balance whether empty or loaded. Discharge heads are quickly convertible from one-way to two-way discharge with no extra parts to buy. Easy to clean, too.

Sprayer controls are mounted on fender of tractor in front of sprayer, readily accessible to tractor operator. By means of these handy controls, the entire discharge head, or either side of it, can be shut off or turned on when desired. New cast steel adjustable hitch assures correct adjustment to tractor regardless of type used.

Model Twenty-Nine Speed Sprayer also available with a 29" fan, 70 HP engine, and 400-gallon tank.

See your nearby John Bean dealer, or write for 1947 catalog.

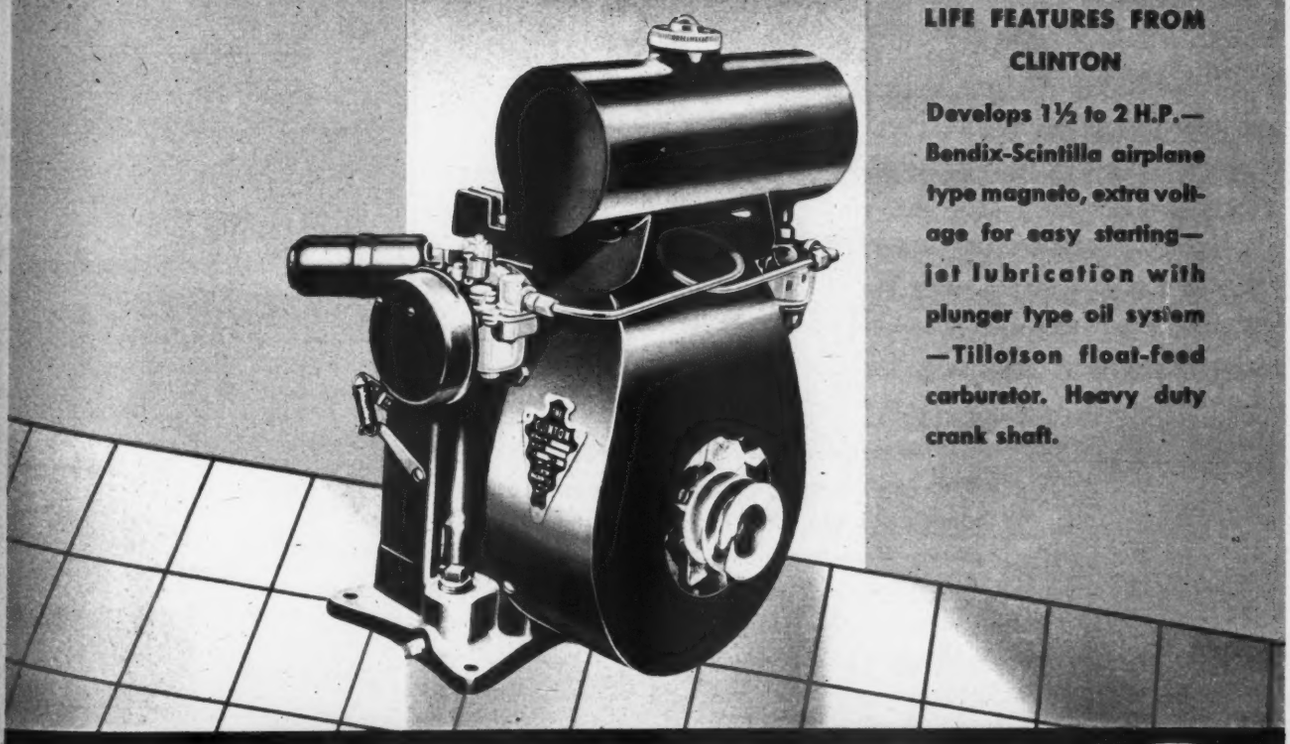
Tops in Quality

The CLINTON ENGINE

Modern engineering, through new principles of design, has developed the Clinton, an engine of superior quality . . .

This modern, light-weight Clinton 1½ H.P. 4 cycle air-cooled Gasoline Engine is being acclaimed every day, as a top performer, by users, dealers and manufacturers employing compact air-cooled power—The Clinton stays on the job and lasts longer.

It's Built for Durability



YOU GET THESE LONG-LIFE FEATURES FROM CLINTON

Develops 1½ to 2 H.P.—Bendix-Scintilla airplane type magneto, extra voltage for easy starting—jet lubrication with plunger type oil system—Tillotson float-feed carburetor. Heavy duty crank shaft.

CLINTON MACHINE COMPANY

CLINTON • MICHIGAN

Snap into winter...

with dependable

CHAMPION

SPARK PLUGS

Prepare your car, truck or tractor for winter driving by having your dealer check your spark plugs *now*. If they have lost their efficiency, insist on new Champion Spark Plugs. They will insure instant starts, in coldest weather, faster warm-ups and smoother engine performance. Champion dealers everywhere are ready to serve you with the correct size and type for your farm engines to insure maximum efficiency and economy. *Snap into* winter with dependable Champion Spark Plugs.

FOLLOW THE EXPERTS

USE DEPENDABLE CHAMPIONS ON YOUR FARM

DECEMBER 1946

VOL. 67 No. 6

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AMERICAN FRUIT GROWER

Published Monthly by

AMERICAN FRUIT GROWER PUBLISHING CO

1370 Ontario St., Cleveland 13, Ohio

E. G. K. MEISTER
Publisher

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CHICAGO, Peck and Billingsley, 185 North Wabash. Phone—Central 0465

SUBSCRIPTION RATES

Domestic Except Cleveland, 3 years $1.00. [illegible] Single copy 20c. Canada, 3 years $1.50. Cleveland and Foreign $1.00 per year.

Entered as second-class matter at Post Office at Cleveland, Ohio, under the Act of March 3, 1879. Additional entry at Mount Morris, Ill.

[PRINTED IN U.S.A.]

LETTERS TO THE EDITOR

Vitamin C Content of Tennessee Varieties

Dear Sir:

In your otherwise excellent "Nationwide Fruits" summary entitled "Vitamin C in Strawberries" in the September issue, I regret to note that you did not find space to list, among the high-vitamin strawberries in the New York test, the two that tied for second place among all commercial varieties. These are Tennessee Beauty and Tennessee Shipper, each listed in the original paper as averaging 75 milligrams Vitamin C per 100 grams of fruit. By all accounts I have heard, these two berries are winning a good place for themselves in the recommended variety list over a broad area of the country—Indiana to Mississippi and Missouri to the Carolinas. Why ignore them in an article for a magazine of national circulation, going as it does to many strawberry growers in the area where a large share of the national crop is produced, and where these Tennessee strawberries look to be among the topmost choices for progressive growers to grow?

Here are some experiment station figures on yields of Tennessee Beauty and Tennessee Shipper compared with Blakemore in adjacent plots:

Location and Test Years		*Varieties and Crates Per Acre*	
Jackson, Tenn.,	1940-41	Blakemore	113.4
		Tenn. Beauty	170.1
		Tenn. Shipper	176.8
Clarksville, Tenn.,	1940	Blakemore	141.7
		Tenn. Beauty	105
		Tenn. Shipper	149.2
Clarksville, Tenn.,	1941	Blakemore	159
		Tenn. Beauty	122
Knoxville, Tenn.,	1938	Blakemore	177.7
		Tenn. Beauty	284.6
		Tenn. Shipper	120.5
Knoxville, Tenn.,	1946	Blakemore	296.6
		Tenn. Beauty	408.5
		Tenn. Shipper	395.2

Both varieties are rated high on freezing and shipping quality. But let's give the Tennessee varieties credit, too, for their high rank in Vitamin C. Nashville, Tenn.

J. C. McDaniel
State Horticulturist

Thank you, Mr. McDaniel. We are glad to include Tennessee's fine strawberry varieties as rich in vitamin C.—Ed.

Deer Repellent

Dear Sir:

In answer to the question in your columns by Mrs. A. Calderom about the damage to her fruit trees by deers, I am sending this clipping from the Ohio Conservation Bulletin.

I think this will solve her trouble.

Dayton, Ohio. L. Wagoner

The clipping reads: "According to Conservation Officer Leon Cuff of Leelanau County, Michigan, orchard men in that county have found an effective method of preventing deer damage to fruit trees. They add a pint of stock dip to 100 gallons of standard spray mixture.—Ed.

From the Other Side of the World

Dear Sirs:

It is good to be receiving copies of your magazine again and I have been very interested in some of the recent developments with various sprays and sprayers.

Spraying here in New Zealand is carried out on similar lines to those in your country, namely the high pressure outfit fitted with either 6 or 8 nozzle booms.

On my place, we have a spray rig mounted on a truck chassis and driven off the truck motor.

Our cultivation and cartage from orchard to shed is taken care of with a tractor mounted on rubber.

In the packing shed we have a grader, so our plant seems to compare quite favorably with that used on the orchards in the States.

As far as fruit grown is concerned, our place is planted in peaches, plums, nectarines, apples and pears. Our season starts prior to Christmas and continues until mid-May.

Hastings, New Zealand Neville J. Cook

We Accept Mr. President

Dear Sirs:

. . . As President of the Washington State Horticultural Association, I am anxious to have an officer from each state association in attendance at our annual meeting. I would like to see such a custom started. I feel that our problems are common. By becoming acquainted through such means we will know each other socially and will be able to work out to better advantage many of our problems—growing problems and marketing. I am sure that we would mutually benefit.

Yakima, Wash. Curtis C. Aller

The officers and members of our horticultural societies ought to advance this plan. There is much to be gained by exchanging ideas and observing what contemporary officers elsewhere are doing. Bring it up at the next meeting of your society.—Ed.

Genuine Sheepnose Apple

Dear Sir:

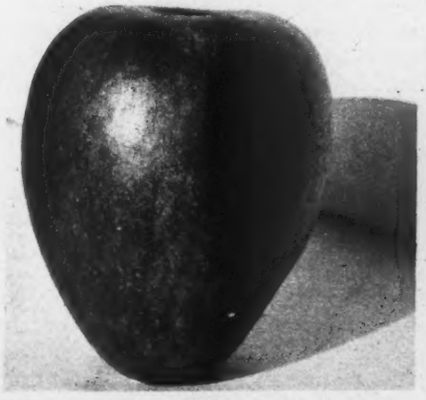
Here is a genuine Sheepnose apple.

There has been a lot of discussion on what a Sheepnose is. Some of the descriptions given were surely of something else.

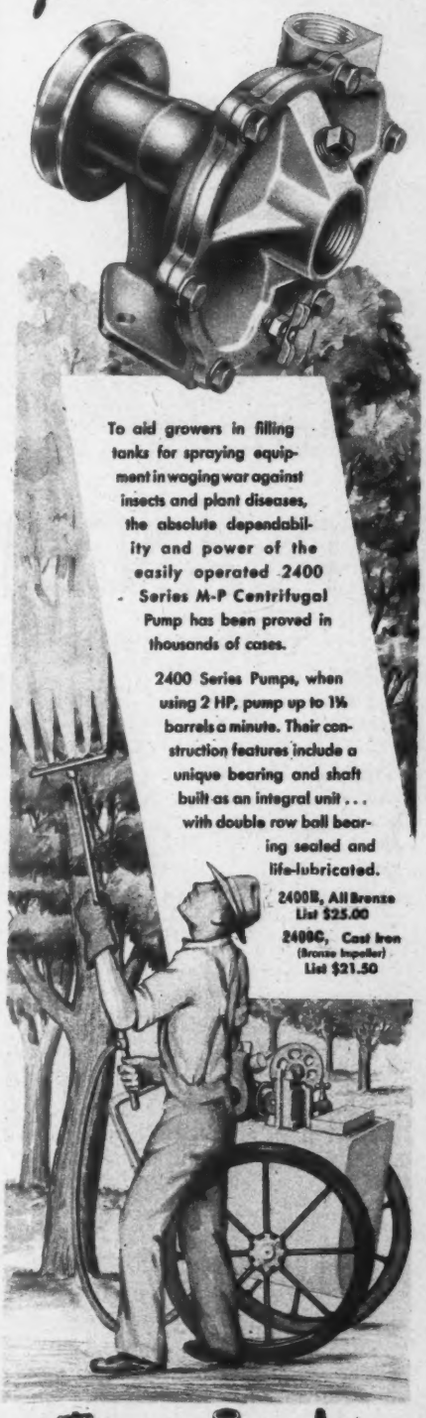
This Sheepnose is a little more green than usual, and is slightly smaller than they are when well cared for.

Wellsville, N. Y. J. D. Trimmer

Here is an actual photograph of Mr. Trimmer's genuine Sheepnose apple. In shape and color it is a fine specimen of Sheepnose.



For PLANT *Protection!*

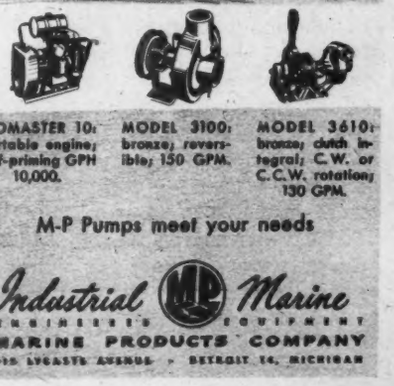


To aid growers in filling tanks for spraying equipment in waging war against insects and plant diseases, the absolute dependability and power of the easily operated 2400 Series M-P Centrifugal Pump has been proved in thousands of cases.

2400 Series Pumps, when using 2 HP, pump up to 1½ barrels a minute. Their construction features include a unique bearing and shaft built as an integral unit . . . with double row ball bearing sealed and life-lubricated.

2400B, All Bronze List $25.00

2400C, Cast Iron (Bronze Impeller) List $21.50



FLOMASTER 10: portable engine; self-priming GPH 10,000.

MODEL 3100: bronze; reversible; 150 GPM.

MODEL 3610: bronze; clutch integral; C.W. or C.C.W. rotation; 130 GPM.

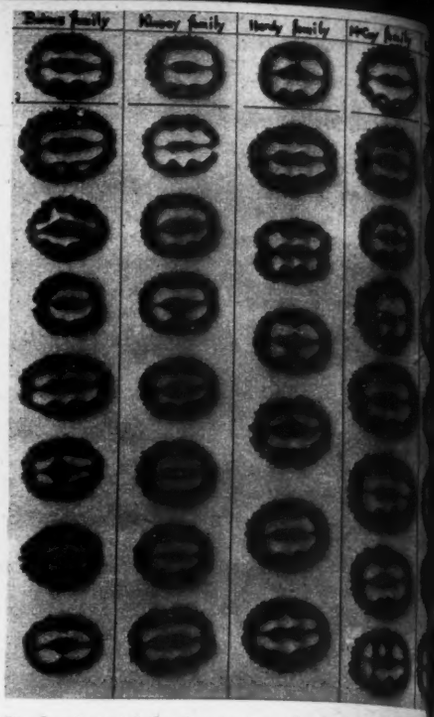
M-P Pumps meet your needs

Industrial Marine Engineers' Equipment

MARINE PRODUCTS COMPANY

815 LYCASTE AVENUE • DETROIT 14, MICHIGAN

Black walnuts in modified forest formation



Predominant inheritance trends in nut tree crops of "wild" walnut seedlings. Bahns—narrow kernel, flat shell. Kinsey—Small, good, fairly uniform nuts. Hardy—knobby kernel, poor cracking. McCoy — rough, thick, erratic shell. Nocka—large, fat kernel capacity.

I PLANT NUT TREES

MY EXPERIMENTS, GAMBLES AND FAILURES

By JOHN DAVIDSON

IN STUDYING nut tree culture, I find one thing lacking. One becomes interested in a report dated, let us say, ten or twenty years ago which contains an account of a project then started. It had great possibilities. What was the outcome? We do not know. No mention of it has appeared since. Did it fail? Let us say it did. Why? The answer to this final query is almost if not quite as important as would be an account of the means employed to make it successful—if it succeeded.

I should like to know, for example, whether anything remains of the Neilson-Post project in Michigan and what its history has been. I should like to hear more, also, about the outcome of many of Mr. Gerardi's intensely interesting and original experiments, such as his method of asexual propagation of heartnut trees on their own roots; or his method of artificially creating beautifully marked burls on blackwalnut logs by systematically and repeatedly scoring the bark. These and many others. Which of his experiments were successful and which were not? Mr. Gerardi's original and adventurous mind is the sort that should be probed for the benefit of those who come after us.

My report is my own short and tentative contribution to such a résumé.

In the April, 1939, issue of AMERICAN FRUIT GROWER you will find my ambitious and optimistic "Farm Plan for Nut Tree Planting." In it I tried to outline a plan which could be used by any practical farmer with but slight sacrifice of useful land. Its last sentence reads as follows: "Meantime, I shall have kept practically all my land in profitable use all the time."

The plan, in substance, was as follows: First, plant 20 acres in a modified forest formation to selected seed, mostly black walnut, the trees to stand 8 feet apart in rows 22 feet apart. Use the space between the rows first for truck gardening and later for an interplanted row of some fast-growing species for timber. No grazing permitted. Second, plant another 20 acres to a nut orchard using grafted trees of named varieties spaced 80 feet apart. Protect from livestock and permit grazing. Finally, plant seed in another 30 acres, spaced 80 feet apart, the seedlings to be eventually top-worked to the wood of promising discoveries from the first plot. Protect and cultivate or graze.

The proposed plan worked very well in a 20-acre meadow where an orchard of grafted trees, mostly pecans and Carpathian walnuts, was protected by cattle guards, but was not completed in the 20-acre seedling plantation where the trees stood 8 feet apart in rows 22 feet apart. No grazing was permitted there, but berries and truck crops were put out. I couldn't keep up the intercropping plan. The reason: war work and lack of help for the inten-

Successful cattle guard for pecan tree in meadow.

sive type of farming required for the project. Finally, when I attempted to interplant the rows with fast-growing trees, weeds choked out most of them in spite of my own efforts. My own physical and time limitations defeated me.

This leads up to an enumeration of my mistakes. First, I did not start early enough in life. The elements of health and strength have their large part in success. Let us see what might have been the result if I had started at the age of 20. Remember, in this first tract of 20 acres I planned a *forest* plantation of selected black walnut seedlings, some chosen for nut quality and some for large, straight timber growth. A tract of 20 acres planted 8 x 22 feet will hold about 4,500 trees. Allow for thinning and other reductions. If only 1,250 trees should reach log size in 50 years, that is, by today for me, at an average of only $50 each, they would come to $62,500—a very tidy estate accumulated with but little labor or risk.

Just now there are perhaps 2,500 well grown trees in the good ground. Pleasantly enough, they do not now seem to need the interplanting of faster-growing trees in order to develop upright growth but are pushing each other up as they stand, 8 x 22 feet apart. In this planting, then, there is evidence of successful timber growth in the good ground and of almost complete failure in poor ground.

Apple and black walnut trees 18 feet apart, with no toxic effect thus far.

Another failure is to be noted in my original plan for cattle guards. These guards were 12 feet in diameter and about 6 in height. These were satisfactory for sheep after I had installed pipe for posts, but not for cattle. Trees grow horizontally as well as vertically. Cattle, reaching for these side shoots, reached over the guards and pushed in. I later reduced the guards to a 6-foot diameter of *strong* woven fence-wire with 6-inch stays, not 12-inch, and raised the height to not less than 8 feet. The cattle may now nibble off the side shoots if they wish but the vertical growth is protected. Above 8 feet the trees can spread out without danger.

Others say, "Permit no grazing at all." I cannot agree except for some

All trees are the same age. Poor soil in foreground explains poor growth—early leaf fall.

reservations where bluegrass bottom is used for the orchard planting of pecans or black walnuts, there is a possible slight reduction in growth from lack of cultivation, but this loss will be nowhere nearly proportionate to a farmer's loss of pasturage. And even in my 8 x 22-foot planting of seedlings, though no grazing was possible while the trees were young, now the 11-year-old trees are large and strong enough in the good soil to take care of themselves. Some lower branches are rubbed off but they should be off anyhow. Meantime, the weeds are kept down, the grass is utilized and, most important of all, the hazard of grass fires is entirely wiped out. A neighbor's planting was destroyed in this way and I shall always fear fire. However, I should not permit grazing in forests where continuous growth of young sprouts is desirable.

Failure three: I have failed completely to interest my tenant in my project. Each mowing or clean-up job is just a chore to him. I can't blame him. Why should I expect anything else? With a World War on hand, with his son then in the army, and with two farms to care for, the immediate bread-and-butter jobs came first and my mowing suffered. However, the wonderful trees somehow continue to grow in spite of weeds and wars, perhaps a bit more slowly than they otherwise might, but I am in no hurry.

The last failure was in my original plan to make a further orchard planting of seedlings *in loco,* ready to be top-worked to the wood of some outstanding find among the selected seedlings. It has not been done.

Another disappointment with me has been the Carpathian Persian walnuts. They partially winter-kill each winter. Their boles still live and send up new growth. I let them stand, hoping for an eventual hardening of the wood. I regard them not as failures but as not yet proven. The pecans (northern varieties) show good growth but, as 8-year-olds, have not yet borne.

For purely experimental purposes I planted apple and peach trees close up to the walnuts. Whichever won out was to stay. Both are there yet. There is as yet no sign of the results of so-called walnut toxicity. They stand, literally, arm in arm.

One success I feel may safely be chalked up. In selecting seed for my original planting, some were chosen for their better nuts, as stated, and some because of the magnificent growth of the parent trees. One such tree gave me seedlings that are definitely superior in growth to other trees which stand in equally good soil—in fact, in adjoining rows. This is noteworthy.

As for the seed selected for nut quality, in spite of the three poor producing seasons now past, the result is distinctly favorable. Out of some score or more sources, the nuts produced upon such seedlings as have fruited *tend* to resemble the qualities of their parents. They all show some variations. Each seedling nut tree is a new individual but with a family inheritance strongly enough marked to make the planting of seedlings, *when done in large quan-*

(*Continued on page* 41)

THE ADVENTURE OF AN OHIO GROWER WITH HIS "FARM PLAN FOR NUT TREE PLANTING"

All photos on this page from SCS

SELL YOUR BLACK WALNUTS

THERE is a steady and profitable market for black walnut kernels which many owners of trees either do not realize or do not consider of sufficient importance to justify an expenditure of their time and effort. As a result, much of this delicious fruit, high in protein and with 4½ times the flavoring value of the pecan, is not even harvested and many farmers lose an opportunity for added income.

Harvesting, extracting and marketing black walnut kernels is far simpler than most farm commodities, and when shelling equipment is purchased, initial cost is quickly recovered from sales to dealers who are anxious to obtain the fruit. Dealers and processors in walnut kernels are distributed pretty generally from the Appalachian Mountain states to Northern Arkansas and northward through the Ohio Valley region and handle between 5,000 to 600,000 pounds of kernels annually, depending upon supply and demand. The smaller dealers, who are usually farm supply, poultry, hide and tallow and grocery concerns, usually sell to larger dealers, brokers or processors at a slight profit.

One of the big users is the Blanke, Baer Extract and Preserving Company of St. Louis, Missouri, which processes between 35,000 and 40,000 pounds of kernels annually in manufacturing black walnut syrup for ice cream and fountain use. Probably 90% of all black walnut kernels are now used in ice cream manufacturing and the small pieces are equally as valuable as the half and quarter kernels.

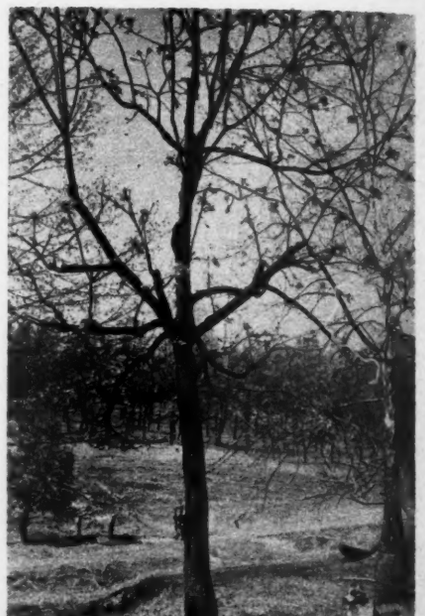
Dixie Shelling Co. Power operated shelling machinery can handle one ton of nuts per hour.

Commercial shelling plants such as the Block Brothers, Nashville, Tennessee; Dixie Shelling Company, Morristown, Tennessee; and E. D. Acker, Broadway, Virginia, are splendid outlets for nuts that have been hulled, cleaned in water and sun-dried. Such plants have capacities ranging from 200 to 3,000 tons annually.

There are many cases of individual success in marketing black walnut kernels. One enterprising farm woman cracked and sold by mail order from 30 to 60 pounds of black walnut kernels annually at a profitable price. These nuts were shelled with Hershey and Daniel hand power machines and were carefully screened and graded for color and dry pieces. Another example of profit in black walnuts is the mail order business developed by a Tennessee collector who sells from 200 to 300 pounds of walnut kernels annually in his spare moments. The nuts are collected locally in 100 pound lots, run through a corn sheller, washed in a tub of water and partially sun-dried. They are then turned over to local people for cracking and

(*Continued on page* 34)

A grafted black walnut tree.



A black walnut planted from seedling.

We are indebted to J. M. Batchelor, formerly Associate Horticulturist, United States Department of Agriculture, for the material in this article. The research and investigation on black walnut trees completed by Mr. Batchelor covered a wide area and produced the impressions outlined here.

FIGHTING NUT PESTS

INSECT CONTROL HAS RECEIVED LITTLE ATTENTION

By J. S. HOUSER
Ohio Agricultural Experiment Station

THE PROBLEM of insect control in nut culture has received far less attention in Amerca than with most other crops. Two exceptions to this statement may be made, for California entomologists have done considerable with the English walnut and those in the Southern States with the pecan. In other areas, it appears that nut trees have been forced, for the most part, to shift for themselves insofar as any assistance in combating their insect enemies is concerned. I am convinced that this situation has had a profound influence on both the quality and quantity of the nuts produced.

Leaf-eating Caterpillars

Black walnut and butternut are highly susceptible to attack by two leaf-feeding caterpillars, the walnut datana, *Datana integerrima,* and the fall webworm, *Hyphantria cunea.* In many areas, year after year, most of the walnuts and butternuts are barren of foliage by September. In addition, at irregular intervals, the foliage of these two hosts is severely attacked in the spring by the spring canker-worm, *Paleacrita vernata;* the fall cankerworm, *Alsophila pometaria;* and several species of May bettles.

The loss of the foliage affects the tree in a number of ways. First of all, wood production is retarded. Second, if the tree is stripped in early spring the production of fruit buds is impaired or even prevented. Third, if the tree is barren of foliage from late summer until frost, the nuts do not size properly and the quality of the nut-meats is lowered. As a matter of fact, it is possible that the shriveled kernels which are common some years may be caused, at least in part, by the absence of foliage for a month or 6 weeks previous to the normal ripening period.

What has been said about black walnuts and butternuts applies almost equally well to hickory, pecan, and English walnut, because all of the insects mentioned thus far will feed on the foliage of these hosts. The hazelnut, or filbert, is somewhat more fortunate since it is not damaged seriously by defoliating caterpillars, except by the fall webworm. However, in Japanese bettle territory, this insect is a serious menace.

The problem of protecting nut trees from damage by leaf-eating caterpillars differs somewhat from that of tree fruits. Take, for example, the case of the black walnut. Most of the crop is produced on individual trees, often widely scattered and frequently in locations inaccessible to spraying equipment. Under such conditions it is thought now to be economically impractical to apply control measures.

In plantings, however, it is a different matter. Lead arsenate used at the rate of 3 to 4 pounds to 100 gallons of water will control all of the insects mentioned, particularly if it is applied when the caterpillars are small.

The new insecticide DDT is equally, if not more, efficient. Moreover, it remains effective on the foliage for a longer period of time. One pound of actual DDT of the water-suspensible type is advised for each 100 gallons of water. Many different formulae of DDT are on the market. Perhaps the most common formulation is one that contains 25 percent of actual DDT. Thus, 4 pounds of such a material should be used with 100 gallons of water. If a 50 percent DDT is purchased, only 2 pounds is required.

DDT is compatible with Bordeaux mixture and the other copper sprays mentioned by Dr. Tilford for the control of diseases of nut trees; thus if the timing requirements are similar for caterpillar and disease control the materials may be mixed.

DDT is specific for Japanese beetle control but is of little value against May beetles.

A cluster of caterpillars of the walnut Datana feeding on black walnut foliage.

Left—A black walnut tree defoliated by the walnut Datana.

Insects that Attack the Fruit of Nut Trees

The walnut husk maggot, *Rhagoletis suavis,* attacks the husk of black wal-

(*Continued on page* 36)

MANY DISEASES ATTACK NUT TREES

By PAUL E. TILFORD
Ohio Agricultural Experiment Station

FUNGUS leaf-spots and blights are common on both black walnut and butternut. Irregular, brown spots, caused by the fungus *Gnomonia leptostyla,* appear early in the summer. Large yellow blotches also occur on walnut leaves and are the result of infection by the fungus *Marssonia juglandis.* These leaf diseases become serious in years when there is abundant rainfall and under such conditions the trees are often prematurely defoliated. The leaf-blight fungi live over winter on old leaves on the ground and new infections start each year from spores formed on these old leaves. After the initial infection, secondary spread de-

(*Continued on page* 38)

CHESTNUT OUTLOOK PROMISING

By H. F. STOKE

IN 1904 a small, fan-shaped fungus, *Endothia parasitica,* was found growing in the bark of chestnut trees in the parks of New York City. Within thirty years this disease had destroyed the entire native chestnut forests of the Eastern States, estimated at more than 40,000,000 acres. The economic loss was incalculable, but certainly ran into many hundreds of millions.

It was some years later before the source of the disease was located in China and Japan; and there, too, were found the chestnut species most resistant to its ravages. Of these the Chinese chestnut, *Castanea mollissima,* and the Japanese chestnut, *C. crenata,* are the most important and promising.

The average American felt the disaster of the chestnut blight most keenly in the loss of the edible nuts; but from an economic standpoint the loss in chestnut wood as a source of timber and of tannic acid used in the manufacture of leather was infinitely greater. These losses have never been replaced. Chestnut trees dead for a quarter of a century and more are still being cut and processed for their tannic acid content, and yet furnish more than half of our domestic supply of that chemical.

Chinese chestnuts.

The problem of producing a blight-resistant timber-type chestnut tree was attacked by the United States Government as early as 1909. To this end the late Dr. Walter Van Fleet, of the Bureau of Plant Industry, made many crosses between the American chestnut and the various chestnut species which had been collected throughout the world.

Without exception, first-generation hybrids of the American chestnut showed pronounced susceptibility to the blight, and all the Van Fleet hybrids are now dead.

This work was again taken up in 1925 by the Bureau of Plant Industry under the direction of the Department of Forest Pathology, to be supplemented in 1930 by the cooperation of the Brooklyn Botanic Garden.

Chinese and Japanese chestnuts are being crossed with the American species, and the resulting hybrids are being back-crossed with the oriental species for greater blight-resistance. Both Dr. Russell B. Clapper, of the Department of Forest Pathology, and Dr. Arthur Harmont Graves of the Brooklyn Botanic Garden report that progress is being made. There appears definite promise that the breeding of a hybrid strain of blight-

Grafted Chinese chestnut, Carr variety, 10 years old.

Blight killed American chestnut.

resistant timber-type chestnut may be ultimately realized. It must be borne in mind, however, that the production of any hybrid that will breed true to type from seed must, of necessity, be a long, slow process. It is very unlikely that any one now living will see our mountains again clothed with chestnut forests.

From the standpoint of the orchardist and the chestnut-hungry man in the street the outlook is far more promising. Indeed, it may be confidently stated that the growing of an ample supply of good sweet chestnuts in the eastern states only awaits the overcoming of human inertia and the production of sufficient nursery stocks of chestnut trees.

Japanese chestnut.

Chinese chestnut in thick stand.

Both the Japanese and Chinese chestnuts are well adapted to orchard culture. The Japanese was introduced into this country about seventy-five years ago. Trees two feet or more in diameter are to be found scattered along the Atlantic seaboard, where they appear quite at home. Early bearing and heavy crops are characteristic. Some of the nuts are the largest of the chestnut species, reaching an extreme diameter of over two inches.

The quality of the nut is poor from the American standpoint, though an occasional tree is found that produces nuts that are fairly edible in the raw state. When boiled or roasted they are quite palatable. In Japan, where they are an important article of food, chestnuts are never eaten raw.

For the American trade, the Chinese chestnut is without doubt the better nut to grow. I have found the tree rather more vigorous than the Japanese species; undoubtedly it has a stronger and more extensive root system, and withstands drought better. Grown in the open it takes very much the form of an apple tree—as also does the American chestnut at maturity. Grown in thick stands it shoots upwards and makes smooth, straight trunks. The tree is fully as blight-resistant as the Japanese, if not more so.

The nuts of the Chinese chestnut, usually three in number, are enclosed in a plush-lined many-spined burr which, in most cases, opens freely when the nuts ripen. In this respect it is far superior to the Japanese chestnut.

The Chinese nut compares favorably with the native species in flavor and is superior in size and the cleanness with which the pellicle peels from the kernel. The tree comes into bearing earlier than the American, in this respect comparing favorably with the apple. In regard to hardiness, commercial planting should best be confined to districts where the peach can be grown.

Seedling trees of the Chinese chestnut are highly variable in productiveness, precocity, size of nuts and season of ripening. Variety names have been given to some select trees of outstanding performance, and others, perhaps even better, are soon to follow. Named varieties must, of course, be propagated asexually, by budding or grafting, to retain their identity.

There has been some difficulty in securing good permanent graft unions, and as yet few grafted trees are offered by nurseries. This will doubtless be overcome in the near future.

To those who contemplate commercial plantings of Chinese chestnuts, the following suggestions are offered:

Secure and plant a few trees as soon as practicable, to learn if adapted to your conditions. Use grafted or budded trees if procurable, seedling trees if you must.

Plant in good, well-drained soil, preferably forty feet apart for maximum nut production. Interplanting with peaches or similar fruits may be

(*Continued on page* 31)

WALNUT SHELLING MACHINE

By A. E. SMALLEY

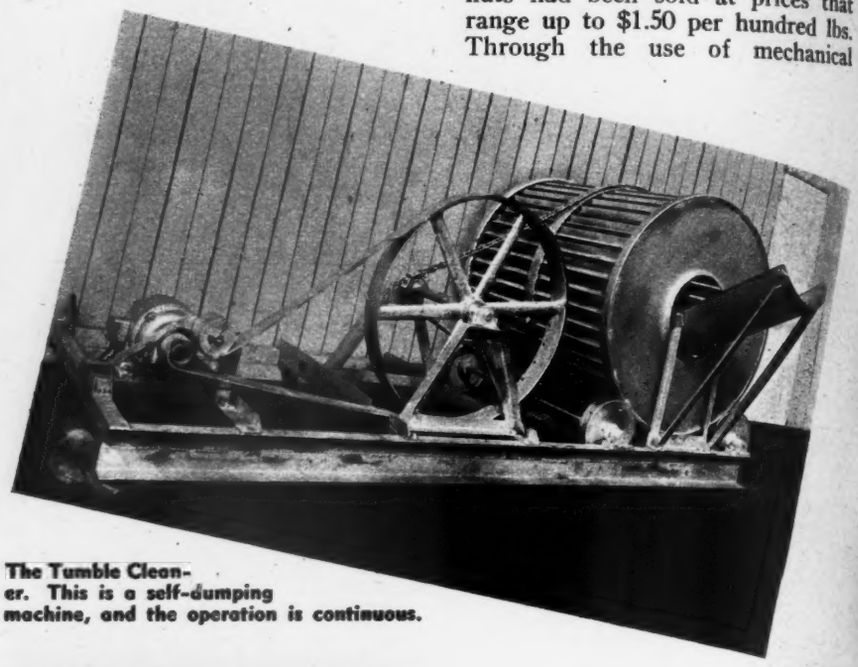
THE black walnut kernel, America's favorite, is being used in increasing volume by manufacturers of cakes, candies, ice cream, etc., and are being made available to the consumer in packages that range from the one ounce cellophane package to the 300 lb. barrel. This has been due largely to the development of cracking machinery which has displaced the tedious old-time method of home cracking and has resulted in the harvesting of many millions of pounds of walnuts which formerly went to waste.

Farmers collect, hull and dry their walnuts, and then take them to some nearby concentration point for hauling to the commercial shelling plants. This collecting and shucking requires no great amount of time, and may be sandwiched between other farm chores. Until the last few years the really big job was the cracking and removal of the kernels. Even when the whole family worked on it, the job was still rather slow. Too, it was not especially sanitary.

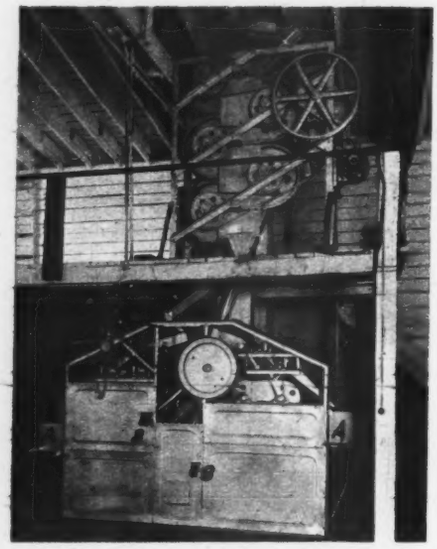
Several different types of shelling machines for the shelling of black walnuts have been developed. These range from the simplest hand operated cracker, with a capacity of several bushels a day, to the completely automatic shelling plants with capacities ranging from 15,000 to 20,000 lbs. per day. An example of the hand cracker is that sold by John W. Hershey of Dowingtown, Pennsylvania. In this machine the nut is inserted between two cup-cylinders and is cracked by pressure applied through a long-handle lever.

A power driven shelling machine has been developed by Kenneth Dick, Peebles, Ohio. This machine is hand fed—the walnuts being placed between mechanical cracking heads that crack the walnut which is then allowed to drop to a conveyor belt. A drum separates the large shells from the smaller kernels and shells. The kernels are removed from the shell pieces by a series of sewing needles attached on special rods. The kernels which are picked up by the needle points are scraped off into pans while the shells drop into a discard box.

An elaborate, completely automatic shelling machine is manufactured by the Smalley Manufacturing Company, Knoxville, Tennessee. These machines are in operation throughout the walnut growing section of the country and process approximately 90% of the black walnut crop. A typical installation of this equipment is shown in the photographs. The tumbler-cleaner, which cleans the nuts and prepares them for mechanical shelling, is usually located outside the building. From this unit nuts are elevated and fed into the cracking machine which is mounted above the kernel separator.



The Tumble Cleaner. This is a self-dumping machine, and the operation is continuous.



Walnut cracking machine. Walnuts enter the machine at the top and the kernels are delivered from the separator at the points marked A, while the shells are discharged at the points marked B.

By gravity the walnuts pass through the graduated roller cracking process and into the separator in which, by a roll impailing process, the kernels are separated from the cracked shells. From one end of this unit flow the kernels better than 99% shell free and on the other end the shells are delivered. There is practically no kernel waste in the shells. These machines weigh about 5,000 lbs. and one man is required for operation.

Up to 1935, when the shelling machinery was introduced, black walnuts had been sold at prices that range up to $1.50 per hundred lbs. Through the use of mechanical cracking and separating machines, shellers are now able to pay a considerably better price for this farm product, paying up to $6.50 per hundred lbs. in the 1945 season and an opening price of about $5.50, 1946 season.

Along with improved shelling equipment the shellers have installed elaborate pasteurizing, drying and inspection equipment, turning out a highly sanitary food product which meets all state and federal food laws.

Matching the increased production brought about by the use of mechanical methods has been a tremendous increase in consumption of black walnut kernels due to the improved quality of the shelled goods and the more dependable supply.

A market is rapidly being developed for black walnut shells which are shipped in car lots from the shelling plants to mills equipped to pulverize this material to a degree that it will pass through a 300 mesh screen. The resulting powder is used in the manufacture of plastics, parting flour, a carrier for insecticides, filler in explosives, a base in the manufacture of linoleum and about 30 other uses.

NUT TREES FOR SHADE

By O. D. DILLER

Ohio Agricultural Experiment Station

ONE of the most important developments in Ohio agriculture during the past decade has been improvement of pasture land through fertilization, new varieties and combinations of grasses and clover, and better methods of management.

As one drives over the State it is evident that many farmers practice "clean" agriculture which means clean fence rows and treeless fields. Shade on a hot summer day is an important item to contented cows, so I am going to plead the case for a cow out on pasture on a sweltering day.

I believe that nut trees, particularly black walnuts, can be of real service in the fence rows and the interior of hundreds of permanent pastures in Ohio.

In 1939 L. R. Neel of the Tennessee Agricultural Experiment Station published an interesting article on the effect of shade on pasture. The results indicated distinct improvement in the carrying capacity of the pastures which had black locust and black walnuts spaced regularly throughout the fields. Improvement was evident both in the amount of Kentucky bluegrass and the pounds of beef produced. So far as I know, no evaluation has ever been made of the direct effect of shade on the contentment and consequent increase in efficiency of cattle for either beef or milk production. I believe this is an important factor. It is frequently used as an excuse for woodland grazing.

Another study similar to the one in Tennessee was conducted by R. M. Smith in southeastern Ohio during the period 1939 to 1941. Dr. Smith made an intensive study of the effects of black locust and black walnuts upon ground covers and he found that in poor pastures black walnut trees improved both the species composition and chemical content of the plants growing under the trees. He rated walnut high as an ideal pasture tree because of its period of leaf activity; its light crown canopy; its small, fragile leaves which decompose rapidly, and are high in mineral matter and nitrogen; its deep tap root which competes very little with the surface rooted grasses for moisture and nutrients; its hardiness; and finally its high commercial value.

It seems apparent, therefore, that the introduction of improved black walnut trees into permanent pastures would be practical from the agronomic angle to say nothing about the beneficial effect of shade to livestock and possible income from occasional crops of high quality nuts.

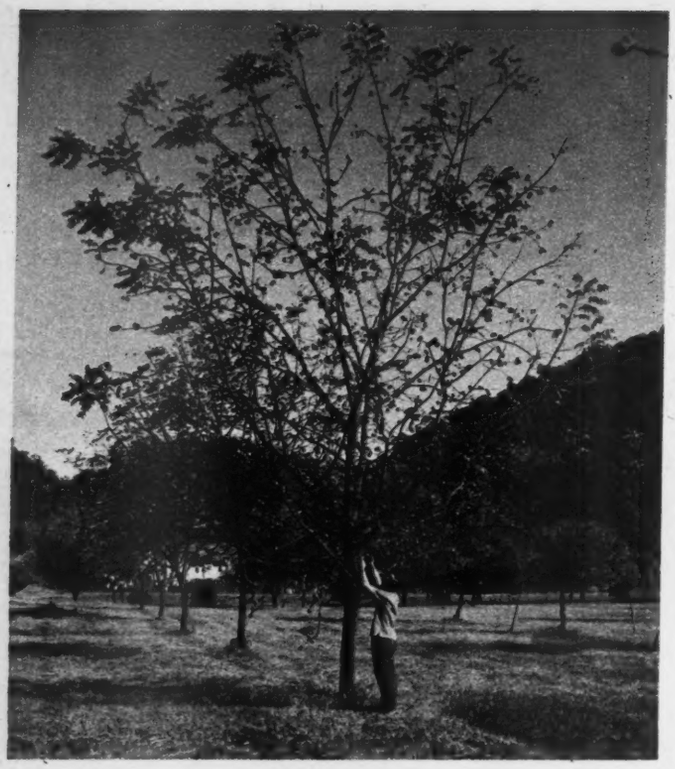
One stumbling block to the adoption of this idea is the protection of the trees during the period of their establishment. The conventional cattle guard with three or four long posts supporting a wire fence is expensive in both labor and materials.

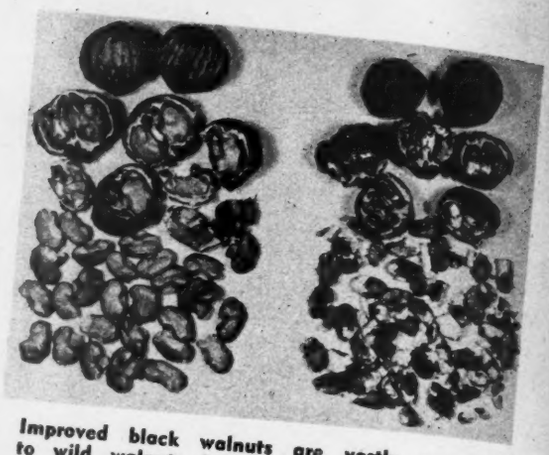
During the spring of 1946 in connection with my forestry instruction at Ohio State University I had as one class project the planting of fifty black walnut seedlings of selected parentage in the cattle and poultry ranges on the University farm. Thirty of these trees were planted along a fence row at 32 foot intervals and were protected by a single electric wire connected to a battery charger.

Nut Trees For Shade

The charger is at one end of the line and the wire is supported by the line posts and a short single post opposite each tree. The one year old seedlings were planted

(*Continued on page* 36)





Improved black walnuts are vastly superior to wild walnuts in kernel quality and ease of cracking. Thomas, left, and wild, right.

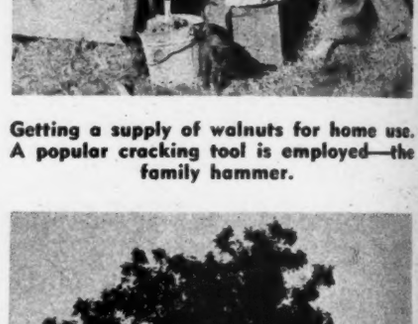
Left—Improved black walnuts are being planted in the Tennessee Valley. These Thomas walnuts have been in bearing for 7 years.

BLACK WALNUTS IN THE TENNESSEE VALLEY

By W. H. CUMMINGS

Tennessee Valley Authority

Getting a supply of walnuts for home use. A popular cracking tool is employed—the family hammer.



The "favorite" walnut tree—providing its owner with shade in the summer, and nuts in the winter.

BLACK WALNUT is a hardwood tree that occurred in the original forest throughout the Tennessee River basin—a 26-million-acre area. Settlers in clearing the forests to develop this region came to recognize that on land where walnut trees had been abundant they could grow fine crops. They found that the walnut timbers they used on the homestead were very durable. In the fall, nut crops were gathered and shucked. They found that the stain from the hulls was good for home dyeing; the kernels were relished as food; and the shells burned well.

In the present forest covering 52 percent of the Tennessee Valley, black walnut is scattered rather sparsely, but maturing trees are cut to yield wood that timbermen now esteem as one of the most valuable cabinet woods in the world. Nut crops from these trees are light but provide food for squirrels which replant walnut in the forest.

Open land, neither in crops nor forests and amounting to 23 percent of the Valley area, is that on which open-grown walnut trees for nut production have potentialities. In cutting brush from this land farmers have let walnut trees grow up around the farmstead, in fence rows or in pastures for shade. Farmers and their children and other residents have come to gather much of the wild nut crop borne by these trees—especially since our native chestnut has been destroyed by the blight. Harvesting and marketing of this nut crop is increasing. The TVA has surveyed the occurrence and studied the yield of wild walnut trees, and is investigating improved black walnut in cooperation with agricultural experiment stations, and with the extension services is stimulating the use on farms of black walnut trees bearing nuts of superior quality.

Open-grown, wild black walnut trees of bearing size, more than 4 inches in diameter, number about 1,600,000 in the Tennessee Valley. Thirty percent of these trees of 12-20-inch diameter yield most of the nut crop; 66 percent are of smaller size just coming into full bearing, and 4 percent are larger trees that are reaching maturity. In a nut yield study the average tree, based on records of 132 sample trees during 6 years, had a diameter of 13 inches and yielded 33 pounds of hulled, dry walnuts. Yields varied widely. As to diameter, one-half of the crops from a 6-inch tree fall between ½ pound and 4 pounds; whereas from a 22-inch tree one-half of the crops are 40 to 100 pounds of hulled, dry walnuts.

Variation was found in portions of the Tennessee Valley between the eastern (Virginia, North Carolina, Georgia, and east Tennessee) and the western (Kentucky, Mississippi, Alabama, and west Tennessee). The occurrence of walnut trees on open,

(*Continued on page* 39)

INFRA-RED RAY FROST FIGHTER

JACK FROST is being thawed out by Michigan State Scientists who have developed a frost fighter which operates effectively yet relatively economically.

An oil burning heater, operated at a cost of 75 cents per hour, sending out infra-red heat rays that keep plants eight degrees warmer than ordinary outside temperatures, has been developed and tested on the Michigan college experimental farm.

The infra-red ray machine consists of an oil burner with a heater tube which operates at low red heat. A series of special type aluminum reflectors direct the infrared ray heat waves to the crop to be protected. The unit, in its first night of testing, consumed 50 gallons of kerosene during 7.6 hours of operation and radiated 872,000 B.T.U. per hour. It held temperatures to 37 degrees, while outside the test area the thermometer dropped to 29 degrees. Of special interest to California growers is the fact that natural gas may be used as fuel for the heater.

Cost estimates on a practical oil-heated unit of capacity to protect an acre cannot be given accurately. The test unit, however, cost approximately $250. Engineers believe that a simple agricultural unit could be built for one-third to one-half this amount.

Announcement of the findings was made by V. R. Gardner, director of the MSC agricultural experiment station. Work on the project was directed by Arthur W. Farrall, head of the section of agricultural engineering, assisted by W. H. Sheldon and Clarence Hansen of the staff. In this development the station had the cooperation of the Detroit Edison Company and the research committee of the Detroit Board of Commerce.

According to Farrall, a commercial unit still in the design stage would not need five reflectors and may have only three. An orchard unit will probably have the bottom reflector several feet above the tops of the trees. Thus it would be a somewhat taller unit than the machine pictured on this page. The commercial-type heater will be considerably simpler than the experimental model and will probably be manufactured in several sizes.

Michigan State College has applied for patents on the machine, and it is expected that units will be produced by commercial manufacturers yet to be announced.

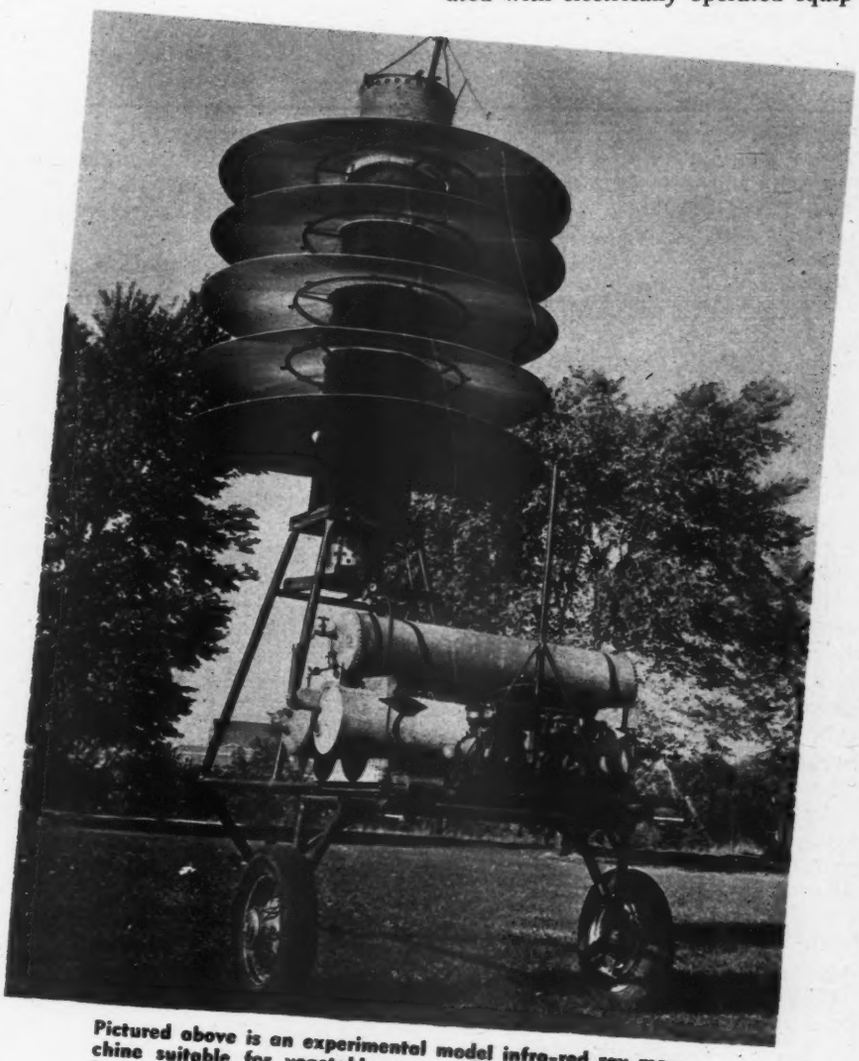
Infra-red heat carries the energy direct from the heater to the plants and soil without the necessity of using the air as a medium of heat transfer. Extra heat is not required to warm the tremendous amount of air between the heater and the plants.

In tests last spring with an electrically operated radiation device, aluminum reflectors, with rod type chromolox electric heating elements, were constructed to stand ten feet off the ground. Thermometers were placed on the plants, beneath the ground and suspended in the air at different parts of the test area. Other thermometers were placed outside the protected area.

On three different nights, vegetation inside the area was kept from 6 to 8½ degrees warmer than in unprotected areas. On the coldest night, temperatures of the vegetation outside the test area dropped to 23.5 degrees, but inside the area the infra-red rays kept plants at 32 degrees and prevented any frost damage.

Infra-red rays are usually associated with electrically operated equipment but tests made with such equipment requiring expensive transformers convinced the Michigan College experimenters that the cost of operation would be excessive and too high except for very high dollar per acre crops.

Farrall and his Michigan College associates were convinced that infra-red radiation is the answer to the problem of frost protection, which costs Michigan growers as high as $20,000,000 some years and is generally caused in a few hours by only a slight dip in the temperature. They then sought a cheaper method of producing the energy needed and developed the oil burning device shown here.



Pictured above is an experimental model infra-red ray machine suitable for vegetable crops. An orchard unit will be taller so as to radiate heat down into the trees.

NATIONWIDE FRUITS

APPLES

Flavor Restored to Products

That fresh, delicious apple flavor found in apples when they are picked at harvest hime can now be incorporated into apple products purchased at the store any time of the year.

Through a process developed during the war at the Eastern Regional Research Laboratory of the U. S. Department of Agriculture, the fragrant vapors that rise during the heating of apple juice can be captured, condensed and concentrated from 10 to 150-fold and then dissolved in water, ready for use. The flavoring obtained this way may be added to any apple product, even baked apples or apple pies, to restore or intensify the fine flavor that has always been lost before.

An apple juice concentrate into which the natural apple flavor has been incorporated has many uses in the preparation of sherbets, ices, fruit juices and candies. An excellent jellied candy has been made with apple pectin flavored with the essence with all the fine bouquet of a fragrant ripe apple.

The remaining 90 per cent of the apple juice, from which the vaporized flavor has been removed, can be concentrated into a bland apple sirup or commercial apple concentrate. In addition to making a savings in storage and shipping, this concentrate can be turned into apple juice again with delicious flavor by the simple expedient of adding a proportional share of the fruit essence and water to the concentrate.

Chemists have found a very fine flavoring results from blending the essences of Stayman Winesap and McIntosh apples.

GRAPES

Name Three New Grapes

"Schuyler," "Steuben," and "Interlaken Seedless" are the names of three new grapes developed by fruit breeders at the New York state experiment station, and believed to be worthy of further trial by growers.

Schuyler, an early black grape, is a seedling of Zinfandel crossed with Ontario. The new Schuyler bears large cylindrical clusters which ripen about 25 days ahead of Concord. It is not as hardy as Ontario or Concord.

Steuben is a cross between Wayne and Sheridan. A black fruited sort that ripens a day or two after Concord, it has proved sufficiently hardy, bears heavily so that it needs close pruning, and appears to be especially resistant to mildew and black rot.

Interlaken Seedless came from a cross between Ontario and Thompson Seedless. When fully ripened the variety has a rich golden yellow color and the fruit has a high sugar content and delicious flavor. It is about as hardy as Seneca, Schuyler and Delaware.

Homemade Grape Juice

An appetizing and attractive beverage can be prepared from grapes if one takes a few precautions in the processing of the juices, according to Dr. C. S. Pederson, food bacteriologist at the New York State Experiment Station.

To get the greatest value out of grapes, they should be hot pressed at about 140 to 145 degrees Fahrenheit. Pressing at this temperature assures the maximum yield with the best possible color and without too astringent flavor. The juice should be handled rapidly, bottling at 170 to 175 degrees, filling the bottle full so as to avoid the presence of air in the bottle. For the same reason foam should be flushed out of the bottle.

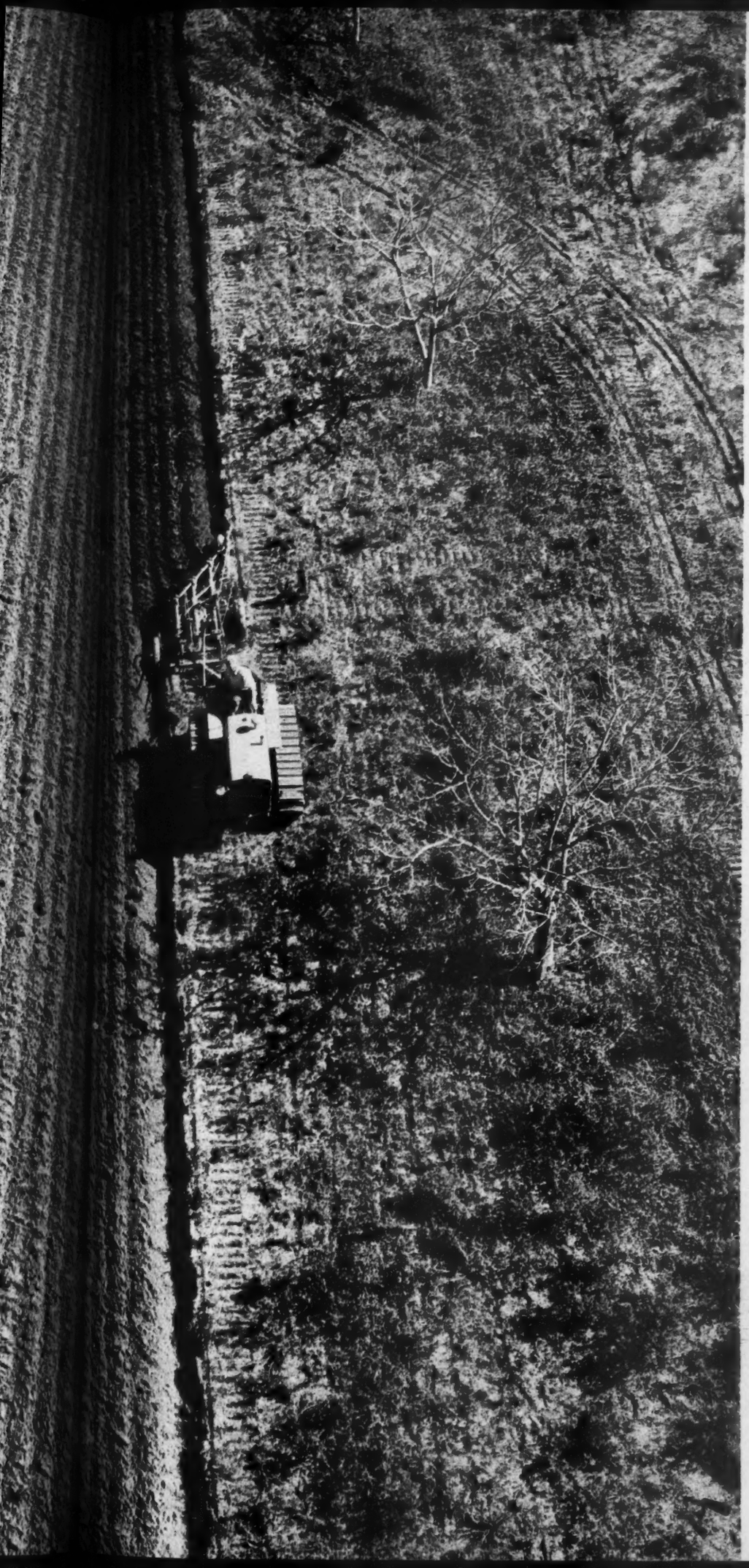
NUTS

Shaking Device Effective

A device for shaking nuts from pecan trees, eliminating the older method of knocking the nuts down with poles, has proved to be an efficient time and labor saver in Florida, according to G. H. Blackmon, State Experiment Station horticulturist.

Although the older method is still used in most orchards, the new machine, capable of doing the work of ten men in harvesting the nuts, is expected to come into general use during the next few years.

The shaker is a device attached to the front of the average farm tractor with an eccentric or off-center shaft driven by a belt from the driving pulley of the tractor. The eccentric works an arm or pitman rod to which is attached a wire cable from 30 to 50 feet long. On the cable end away from the tractor is a grab hook



which is fastened around the trunk or branches of the tree.

The tractor is driven close enough to the tree to enable the cable man to fasten the cable to the trunk or a large branch; then the tractor is backed away until the cable becomes taut. The driver then sets the brake, releases the clutch, and engages the pulley clutch. The motor is speeded up for a minute or so and the jerking motion of the cable vibrates the tree or branch so vigorously that practically all the nuts are shaken off.

While the "shaker" produces a violent vibration of the tree it does not injure it in any way, while poles often injure the branches. On small trees the shaker may be attached to the trunk, while on large trees it is necessary to attach the cable to several large limbs.

STRAWBERRIES

Answer to Fasciation

Strawberry growers troubled by the large flat multiple berries produced by fasciation may find the answer to their problem in experiments made by the U.S. Department of Agriculture.

In experimental tests, L. G. Willis of the North Carolina Agricultural Experiment Station found the plants responded to treatment with borax, which can be used in solution or sprinkled on dry plants in granular form, using from five to ten pounds per acre. Borax does the most good if applied early in September when the varieties most susceptible to the disease produce embryonic fruit buds.

PEACHES

Fairhaven is New Variety

A new peach variety has been announced by Stanley Johnston, in charge of the South Haven Experiment Station of Michigan State College.

Named the Fairhaven, the new variety is earlier than the Elberta, and is the result of efforts on the part of Michigan fruit breeders to develop an early variety that would avoid damage from Oriental fruit moth, which attacks late varieties.

Production in tests have been remarkably good, and Johnston says the new variety shows high vigor and productiveness tendencies, and seems resistant to winter injury.

Fruit of the Fairhaven is medium-large, nearly round, and mostly of a bright golden color.

Photo from Caterpillar Tractor Co.

State NEWS

ARKANSAS—We have just finished what has, on the whole, been a fairly satisfactory season for Arkansas fruit growers. For the third successive season the southern half of the State has had a large peach crop, and for the first time in several years the northwest Arkansas peach crop was not killed by a late frost. The northwest Arkansas apple crop was one of the cleanest we have had in several years. Quality was fairly good in spite of the drouth which started in mid-summer and continued until mid-October. The drouth has destroyed many of the strawberry plantings, both old and new, and the expected increase in acreage next year will not be realized.

One of the most outstanding production features of the year has been the way the peach orchards have maintained color and held their leaves throughout the drouth. This is the result of the extensive cover crop program that has been carried on with the growers during the past six years.—*Earl J. Allen, Secretary, Arkansas State Horticultural Society.*

COLORADO—Peaches will arrive at distant markets in better condition if they are shipped in the new type freight car known as a "fan car", according to a report just released on shipping tests last year from Colorado's western slope peach district.

The report is on preliminary tests conducted by the U. S. Department of Agriculture in cooperation with Colorado A. and M. College Experiment Station and western slope peach growers.

The "fan cars", in which fans operated from the axles of the cars circulate the air in the refrigerator cars, were compared with standard cars in which ice was placed in end bunkers and with overhead bunker cars in which the ice was overhead.

"By noon the second day," the report states, "the top temperatures in the overhead bunker car were 2.5 to 3 degrees lower than those in the standard end-bunker car but 5 to 10 degrees higher than those in the fan car.

VIRGINIA—John F. Watson was chosen executive secretary of the Virginia Apple Commission at the last meeting of the commission held in Richmond.

The Virginia State Apple Commission was set up in July by the General Assembly, and has charge of advertising the state's apples, as well as conduct an educational program in the interests of the apple industry.

Other members of the commission are: Delegate E. Blackburn Moore, chairman; Delegate W. F. Young of Staunton, vice-chairman; Roy McClanahan of Charlottesville; J. B. Bowman of Chilhowie; Robert J. Rea of Mt. Jackson; B. J. Wood of Flint Hill and T. H. Beasley of Roanoke.

INDIANA—Ben B. Sproat of Vincennes is the new Secretary of the Indiana Horticultural Society, replacing K. I. Fawcett. Mr. Fawcett was carrying the work as an extra load in addition to his experimental work since Monroe McCown left in 1944. Everyone appreciates the fine work done by Fawcett under many handicaps.

Mr. Sproat graduated from Purdue in 1931, and received his Master's Degree from the University of Maryland in 1933. He has since been working for the U. S. D. A. with Dr. Darrow who is in charge of small fruit investigations.

He has seen service in Iowa, Texas, California and other states. During the war he was assigned to the Guayule rubber project from which he was discharged in Texas this summer when that work was discontinued.

IOWA—In general, we have had excellent weather for harvesting apples this fall. In most cases the harvest has been good, and prices, although not as high as last year, have been very good. The greatest difficulty I have observed is getting labor to do the picking and packing.

During the week of September 29th, William Collins, Secretary of the Iowa Fruit Growers Association, Dr. Amin Nazif, Director of Agriculture of Syria, and I visited some 23 orchards in eastern Iowa. We visited a few orchards where harvesting had been completed, but in most cases part of the crop was still on the trees. My regrets on this trip are three: (1) We were unable to visit quite all the orchards we had planned to visit; (2) All visits were too short; and (3) I wish every apple grower in the state could have been along.

I found considerable variation in the yields. The lowest yield I ran into was 25 bushels per acre; the highest, 465. Other orchards averaged 375, with two other orchards averaging 233 bushels per acre. These yields, of course, include all the apples produced on the trees this year, including windfalls.

In general, the quality of the fruit was good, and in most cases size was good. A few orchards showed late codling moth in which cases the growers said that they should have put on another spray. But worms were so much lighter than last season there was no comparison. The highest percentages of worms I ran into ran perhaps 10% to 15%. The smallest, less than 1%. There was some scab here and there, but in general very little. Color was very good, with the exception of some orchards where the trees were planted too close together and there had been heavy fertilization. The finish on the fruit was excellent. —H. E. Nichols.

MASSACHUSETTS—Any time a half-dozen or two dozen apple growers get together talking shop certain questions always come up.

One is "How many McIntosh do we grow in relation to other varieties?" Another is "Where do our apples go; chain stores, commission outlets, jobber-handlers?" Still another is "How many are sold direct either to consumers or retailers?"

Just to get a little information on some of these points a postcard survey was made by asking one hundred growers to cooperate. This group was selected as a representative cross-section of large and small volume producers. An attempt was made to have the one hundred comprehensively representative of the industry.

Fifty-six returned the card. Not all answered all questions. This group reported

(*Continued on page* 37)

STRAWBERRIES TAKE TO THE AIR

Captain Hanson and Miss Erlendson, of United Air Lines, could not resist tasting the strawberries which were recently flown into Seattle via air freight. Consigned to the Pacific Fruit & Produce Co., the berries were packed in Salinas, California, and sold in Seattle markets the next day. The Cargoliner carried 6,250 pounds of the fruit.

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DDT FOR CHESTNUT WEEVILS

By E. R. VAN LEEUWEN
U. S. Department of Agriculture

Two kinds of weevils attack chestnuts in the United States. They are Curculio proboscideus, F. and C. auriger (Casey). Both are native to America, and are found over practically the entire range of our native chestnut. The mouth parts of the beetles are situated at the end of an extremely long and slender beak, thereby enabling them to obtain most of their food from beneath the external surface of their host plant. For this reason stomach poisons applied to trees have not been eaten by them and hence have been of no practical value. This method of feeding suggested the use of a contact insecticide such as DDT.

Laboratory tests conducted in 1944 showed that DDT is highly poisonous to the weevils and in small scale spraying tests it appeared safe on chestnut foilage. Preliminary orchard tests carried out in 1944 on a few Chinese seedling trees on the grounds of the Plant Introduction Garden of the Bureau of Plant Industry, Soils, and Agricultural Engineering, Bell, Maryland, gave very encouraging results. A similar series of tests in 1945, limited because of the destruction of 95 percent of the crop by late frosts, gave similar results.

In 1946 late frosts again occurred and reduced the nut crop by approximately 80 percent. A few trees, however, were available for carrying out a limited number of experiments at Glenn Dale, Maryland, in a heavily infested orchard. In all tests a wettable powder containing 50 percent of DDT was used at the rate of 4 pounds to 100 gallons of water. The results are given in the following table.

Effectiveness of DDT against chestnut weevils, Glenn Dale, Maryland, 1946.

Time of spray applications	Percentage of injured nuts	Percentage reduction in injured nuts as result of spraying
Aug. 15	43	53
Aug. 30	43	53
Sept. 11	58	36
Aug. 15, Aug. 30	19	79
Aug. 30, Sept. 11	26	71
Aug. 15, Sept. 11	43	53
Aug. 15, Aug. 30, Sept. 11	9	90
Check, unsprayed	91	—

These data show a marked increase in clean nuts as a result of spraying with DDT. The difference would probably have been still greater had the sprayed trees not been surrounded by many hundred infested unsprayed trees from which the sprayed trees could readily been reinfested.

DDT is one of the most effective insecticides for the protection of chestnuts from weevil attack, but there is much yet to be learned regarding the proper time for applying it to chestnut trees. For the benefit of those who wish to try this material, the following tentative recommendation is made, based on the time each variety first drops its nuts.

Thoroughly apply to all parts of the tree DDT wettable powder in such quantity as will give 2 pounds of DDT in 100 gallons of water.

For example, use 4 pounds of a wettable powder that contains 50 percent of DDT or 8 pounds of one that contains 25 percent of DDT in 100 gallons of water. Three applications should be made, the first approximately 30 days before the first nut is due to drop; the second and third applications should follow at intervals of 12 days.

In handling DDT, one should use the same care as with such well-known insecticides as lead arsenate, paris green, calcium arsenate, and nicotine.

Nearly all forest stands and groves of the American chestnut, *Castanea dentata (Marsh) Borkh,* have been killed by either a chestnut root rot or the chestnut blight. Since the rapid spread of the chestnut blight has been responsible for the death of most of our chestnut trees within the past 40 years, there is at the present time considerable interest in planting chestnut orchards for nut production, especially with Asiatic varieties that are resistant to chestnut blight. The nuts from these trees, however, are subject to attacks by weevils. In many localities the nuts become excessively wormy and this has been one of the most serious obstacles in the way of profitable chestnut growing. In the vicinity of Washington, D. C., it is not unusual to have 90 to 100 percent of infested nuts.

The writer acknowledges the cooperation of E. H. Siegler of the Bureau of Entomology and Plant Quarantine, and G. F. Gravatt, R. B. Clapper, and F. C. Bradford of the Bureau of Plant Industry, Soils, and Agricultural Engineering.

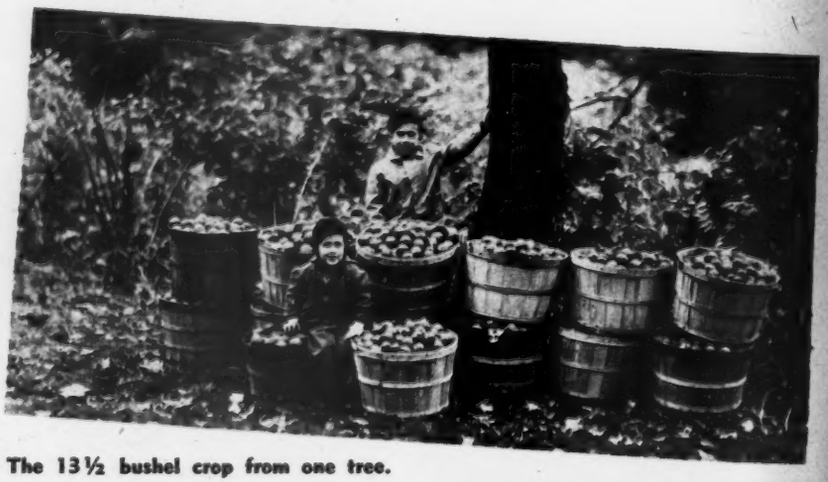
THOMAS BLACK WALNUT YIELDS 13½ BUSHELS

THE productivity of the Thomas black walnut tree in the Ithaca, New York, area is shown by the accompanying photograph of the production of one tree. L. H. McDaniels of the New York State College of Agriculture reports that Thomas has been by far the most successful variety among the better known grafted sorts. He also states the Snyder is doing quite well.

The tree shown is 22 years old, and bore 13½ bushels in the shuck this year. After the nuts were dried and shucked slightly more than one-third remained. This proportion is higher than in some other varieties, according to Dr. McDaniels.

The result of grafted nuts well-grown is illustrated by the photograph of the nuts with shells partially removed. To get this result, says Dr. McDaniels, the nuts must be cracked from the ends with a cracker which applies pressure on the sides of the points of the nuts.

Thomas, right, compared with Ohio.



The 13½ bushel crop from one tree.

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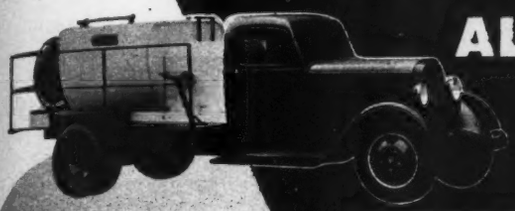

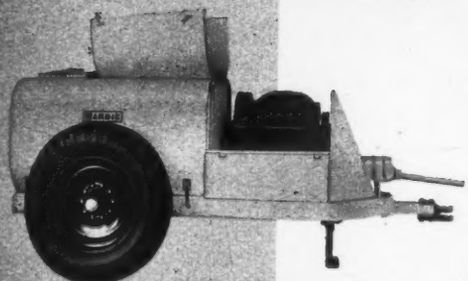

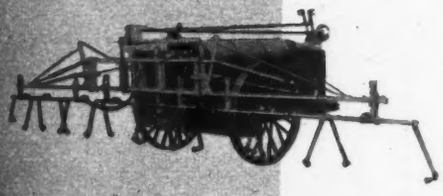

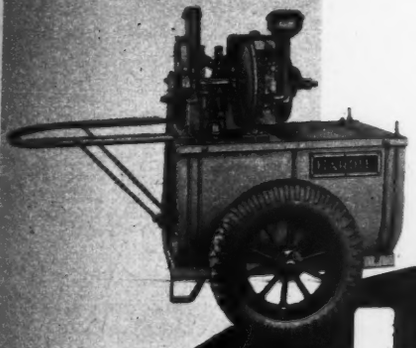

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A New Mite Control

Mite infestation has increased so rapidly, particularly where DDT is used for codling moth control, that it has become a serious menace to many growers. It was not difficult to trace the cause of expanding population of mites, for entomologists discovered early that DDT was not toxic to these small insects but did kill their natural enemies. Now, however, a new chemical, Hexaethyl Tetraphosphate, has been shown to give excellent results on red spider mites and also aphis.

The new spray, a synthetic, organic insecticide, is a potent killer and can be used at low dilutions with good results. It is corrosive to metals and it is necessary to rinse the sprayer with water after spraying.

The new material deteriorates rapidly when mixed with water and must be applied promptly. It is reported that because of deterioration it has very little residual effect and additional sprays are necessary as new mites are hatched.

The spray is now being manufactured as Vapotone by the California Spray Chemical Corporation. It is marketed as a dispersible liquid containing 50% of the active ingredient, and as a dust mixture in which 3% of the active ingredient is dispersed on an inert carrier.

"Hail to Thee, Old Apple Tree!"

At the end of the Christmas season, on Twelfth Day, orchardists in old England performed a quaint rite in honor of the productivity of the apple trees.

Each orchardist gathered his men in a group, and led them into the orchard, carrying a large pitcher of cider. They gathered around one of the heaviest bearing trees, and drank a toast to this chanted rhyme:

Hail to thee, old apple tree!
Whence thou mayest bud, and whence thou mayest blow!
And whence thou may bear apples enow!
Hats full! Caps full!
Bushel, bushel-sacks full!
And my pockets full, too!—Huzza!

After draining the pitcher, the men marched back to the house, where the women had bolted the door from the inside. All appeals for admission were in vain. The women would not let them in until someone had guessed what was cooking on the spit.

The man who guessed first what was cooking on the spit had it served to him while the others watched enviously.

CHESTNUT OUTLOOK

(*Continued from page* 19)

practiced. Cultivate until the trees shade their own root area.

When trees have demonstrated conditions are congenial—and they are not particular except as to extreme cold and wet, soggy soil—extensive planting is indicated.

By that time named varieties of known worth will doubtless be available in grafted trees, and the writer is strongly of the opinion that these, only, should be planted in any extensive commercial project. From both experience and observation I find that such selections may be expected to produce several times the poundage of nuts per acre as may be expected from seedling trees, not to mention better size and quality.

Regarding the future of the chestnut market, there is little doubt that the supply of good sweet chestnuts will not catch up with the demand for many years, and prices should remain good. For several years wholesale produce dealers have eagerly paid 35c per pound for Chinese chestnuts locally, while nurseries pay much higher prices for seed purposes.

Since the disappearance of the American chestnut from the market, we have largely depended on Europe for the inferior European chestnut, *C. sativa,* along with a small production from the west coast. Now the European chestnut faces extinction, for it is as susceptible to the blight as was the American species. I have a letter from Dr. G. F. Gravatt, Senior Pathologist of the Forestry Division of the Bureau of Plant Industry, U.S.D.A., from which I cull the following: "Regarding the chestnut blight in Italy, it is loose at a number of points and there is little prospect it will be controlled."

There is every reason to believe that profitable commercial growing of the Chinese chestnut in this country will soon be realized. The most serious obstacle is not the chestnut blight, but the chestnut curculio, the "weevil" that infested the nuts of the native chestnut in the old days, and that persists in the wild chinkapin. The U. S. Bureau of Entomology and Plant Quarantine at Beltsville, Maryland, has been testing new spray materials for the control of the chestnut weevil and an announcement of a very promising spray control with DDT appears in this issue of the AMERICAN FRUIT GROWER, on page 28.

In any chestnut planting two or more varieties or seedlings should be used, and planted in close proximity to insure cross-pollination.

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- Engineered Completely New Throughout
- 37.4 Drawbar H.P.
- 5 Speeds—1.46 to 5.47 m.p.h.
- Weight: 44 inch tread 10,750 lbs. / 60 inch tread 11,250 lbs.
- 1,000 Hour Lubrication—Truck Wheels, Idlers, Support Rollers
- 2-Cycle Diesel Power
- Full Visibility; Comfortable Seat, Readily Accessible Controls
- Simplified Maintenance
- More Traction, More Ground Contact, Better Balance

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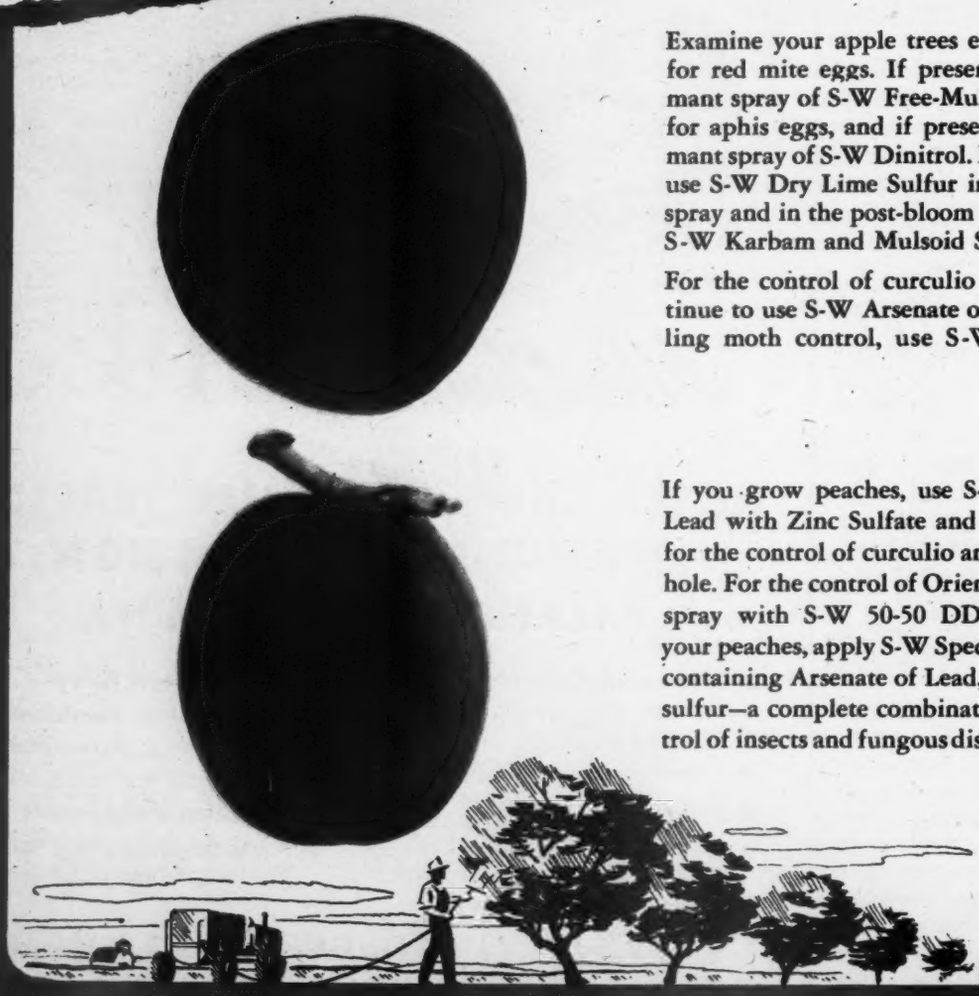
IT'S ALLIS-CHALMERS
TRACTOR DIVISION • MILWAUKEE 1, U. S. A.

HEAR Farm News of National Significance . . . Broadcasts Direct from Leading Farm Events . . . Your Musical Favorites—All on THE NATIONAL FARM AND HOME HOUR, Every Saturday, on Full NBC Network. Presented *as a Service to Agriculture* by Allis-Chalmers.

SHERWIN-WILLIAMS RECOMMENDATIONS TO FRUIT GROWERS FOR 1947

...FOR IS



Examine your apple trees early this winter for red mite eggs. If present, apply a dormant spray of S-W Free-Mulsion. Also, look for aphis eggs, and if present, apply a dormant spray of S-W Dinitrol. For scab control, use S-W Dry Lime Sulfur in the pre-bloom spray and in the post-bloom applications use S-W Karbam and Mulsoid Sulfur.

For the control of curculio on apples, continue to use S-W Arsenate of Lead. For codling moth control, use S-W 50-50 DDT.

If you grow peaches, use S-W Arsenate of Lead with Zinc Sulfate and lime as a spray for the control of curculio and bacterial shot hole. For the control of Oriental peach moth, spray with S-W 50-50 DDT. If you dust your peaches, apply S-W Special Peach Dusts, containing Arsenate of Lead, zinc, DDT and sulfur—a complete combination for the control of insects and fungous diseases of peaches.

50-50 DDT

A finely ground, wettable composition containing 50% DDT by weight, which covers both fruit and foliage uniformly.

DINITROL

A dry mix, wettable compound of dinitro-ortho-cresol, recommended for use with a good oil emulsion as a dormant spray to destroy aphis eggs.

ARSENATE OF LEAD

A 98% pure Arsenate of Lead, possessing superior adhesive and spreading properties insuring good mixing and suspension and effective control of chewing insects.

...OR 1947!

If you grow sour cherries, plan to spray your trees with S-W Basi-Cop—the original tri-basic copper sulfate—for the control of leaf spot. S-W Basi-Cop is not injurious to cherries as is Bordeaux Mixture. Your cherries will be larger and of better quality when sprayed with S-W Basi-Cop.

If you grow grapes, plan to spray with S-W Basi-Cop and S-W 50-50 DDT for the control of berry moth, leafhopper, rose chafer and black rot. This combination will enable you to produce fuller bunches of grapes with a higher sugar content, due to the fact that your foliage will be protected from damage against leafhopper. This combination is the most effective one ever developed for use on grapes.

HIGHLIGHTS OF 1946

The quality of the apple, peach, cherry and grape crops grown in 1946 was the best of many seasons. The extensive use of DDT compositions was largely responsible for the effective control of codling moth of apples, Oriental fruit moth of peaches, berry moth, leafhopper and rose chafer of grapes.

The substitution of basic copper sulfate by many cherry growers for old-fashioned Bordeaux Mixture as a spray for the control of cherry leaf spot, resulted in larger and better-quality cherries and finer foliage.

Apple growers who applied dormant sprays of dinitro compounds for the control of aphis were able to reduce aphis infestations during the growing season to a minimum.

The use of Dry Lime Sulfur instead of caustic Liquid Lime Sulfur in the pre-bloom spray on apples for the control of scab did away with the usual dwarfing and burning of apple foliage caused by Liquid Lime Sulfur.

Ferric dimethyl-dithio-carbamate and wettable sulfurs gave excellent control of scab in the after-bloom sprays without causing russeting of fruit and injury to foliage.

Results obtained from the use of hormone sprays in preventing the premature dropping of apples were unusually satisfactory, because they not only held the apples on the trees, but permitted better coloring of red varieties.

Sherwin-Williams research both in the laboratory and in the field has done much to assist fruit growers throughout the country in growing maximum crops of high-grade fruits.

SHERWIN-WILLIAMS SPRAY MATERIALS

INSECTICIDE DIVISION

101 Prospect Ave., N. W. • Cleveland, Ohio

KARBAM

A dry composition of ferric dimethyl dithio-carbamate, which is readily wettable, for use in the control of apple scab and cedar rust.

DRY LIME SULFUR

A standard 33 degree Baume Liquid Lime Sulfur to which a stabilizer has been added—recommended as an effective substitute for lime sulfur solution.

MICRONIZED SULFUR

A micro-fine wettable sulfur of exceptional fineness, containing not less than 93% of sulfur, having a particle size of 3 to 4 microns—recommended for use as a spray for apple scab and brown rot on peaches.

Let VIGORO-Feeding Increase Your Profits!

The trend in fruit growing is toward complete feeding...supplying the trees with all of the many plant food elements they need from the soil. That's because experiments have proved that proper feeding really pays.

The big swing is to VIGORO-feeding. Thousands of fruit growers across the land have been using VIGORO for years. They know this plant food increases yields . . . improves the quality of their fruit, and fosters healthy growth. Many growers report over-the-market prices for VIGORO-grown fruit because it looks better, tastes better, and keeps better.

Get full information about VIGORO before you plan your next feeding. Write Swift & Company, Plant Food Division, Chicago 9, Ill.

It is wise to order your plant food early and take delivery early!

NEW LATEX SPRAY TESTED

AN interesting new spray chemical is Polyethylene polysulfide, abbreviated p.e.p.s., a synthetic rubber-like latex derived from petroleum and sulfur. When sprayed from an ordinary sprayer it forms an elastic network, high in sulfur content over the fruit and leaves. The network is resistant to rain or dew, has fungicidal properties, and is an air drying adhesive which can be used as a carrier for insecticides and other fungicides.

The material has been given the name of Goodrite p.e.p.s. and is manufactured by the B. F. Goodrich chemical company. P.e.p.s. has been field tested for the past two years and, according to the manufacturers, has proven itself over a wide range of conditions.

In tests p.e.p.s. has not interfered with the normal activities of the leaf. Experiments also showed that p.e.p.s. did not injure or burn a wide range of plants.

With spray applications discontinued six weeks before harvest, tests show that no odor, taste, or other undesirable evidence of the deposit remains on the fruit.

As an adhesive for standard insecticides, p.e.p.s. has been shown to be an excellent carrier and sticker. These tests have shown it to be physically compatible with fungicides such as Bordeaux, sulfur and lime-sulfurs, and with insecticides such as lead arsenate, lime, fixed nicotine, nicotine sulfate, DDT or combinations thereof. It is believed that p.e.p.s. can be used with some copper and zinc compounds and also with oil sprays.

For example, when used as an adhesive for lead arsenate and lime for the control of codling moth, p.e.p.s. more than doubled the percentage of clean or undamaged fruit.

Spray Residue after 6 weeks weathering (9.7 inch rain)—left, sprayed with 0.25% p.e.p.s., the translucent spray deposit is not visible. Middle, sprayed with 0.25% p.e.p.s., and 10 lb. sulfur/100 gal. spray deposit visible; Right—sprayed with 10 lbs. sulfur per 100 gals. spray deposit removed by rain.

SELL BLACK WALNUTS

(*Continued from page* 16)

picking.

To obtain light-colored kernels the nuts are collected early in the season and immediately hulled and washed. The kernels, after being removed, are then screened and graded for color and shrivelled kernels removed by hand. The graded kernels are then packed in one or two pound cloth or cellophane bags, boxed and are ready for shipment.

It is well to remember that kernels must be pasteurized to meet U. S. pure food requirements.

The demand for black walnut kernels exceeds the supply and dealers are constantly clamoring for more kernels and of better quality. Candy manufacturers particularly are concerned about supply of kernels and many opportunities for their use are lost each year because of failure to furnish adequate supply of these nuts.

In the opinion of observers and large users, the market for black walnut kernels will expand when the supply becomes more steady. It is important for owners of walnut trees to harvest the nuts and place them in distributing channels and further to organize cooperative farm groups and competent individuals to implement collection in order that commercial users will be served.

Names of manufacturers making motor power and hand operated black walnut cracking machines as well as machines for cleaning and grading nuts can be obtained from the Editorial Department of the AMERICAN FRUIT GROWER. The names of dealers in shelled black walnuts will also be furnished to interested readers.

CALENDAR OF COMING MEETINGS AND EXHIBITS

Dec. 2-4—New Jersey State Horticultural Society Annual Meeting will be held at the Claridge Hotel, Atlantic City.—Arthur J. Farley, Sec'y-Treas.

Dec. 2-4—Annual Meeting of the Washington State Horticultural Society at Yakima.—Curtis C. Aller, Pres.

Dec. 3-4—The 67th Annual Meeting of the Arkansas State Horticultural Society will be held in Springdale.—Earl J. Allen, Sec'y.

Dec. 3-5—Michigan State Horticultural Society Annual Meeting in Civic Auditorium, Grand Rapids, Mich. There will be a Michigan Apple Show and commercial exhibits in connection with the meeting.—H. D. Hootman, E. Lansing, Mich.

Dec. 6-7—Montana Horticultural Society meeting at Polson, Montana.—George L. Knight, Sec'y.

Dec. 9-11—Illinois State Horticultural Society Annual Meeting at Springfield.—C. C. Mast, Sec'y.

Dec. 10-11—Connecticut Pomological Society will hold the 56th Annual Meeting and the Fruit and Trade Show at Hotel Bond, Hartford, Conn.—H. C. C. Miles, Sec'y.

Dec. 11-13—The Indiana Horticultural Society will hold its Annual Meeting at the Hotel Severin in Indianapolis.—Ben B. Sproat, Sec'y.

Dec. 12-13—Kansas State Horticultural Society Annual Meeting at Wichita, Kansas.—George W. Kinkead, Sec'y.

Dec. 13-14—Nut Growers Society of Oregon and Washington will hold its annual meeting at Corvallis.

Dec. 16-17—Virginia State Horticultural Society Fifty-first Annual Meeting at the John Marshall Hotel in Richmond.—W. S. Campfield, Sec'y.

Dec. 17-18—Tennessee State Horticultural Society Annual Convention at Nashville, Tennessee, headquarters at Hotel Hermitage.—G. M. Bentley, Sec'y-Treas.

Dec. 19—Kentucky State Horticultural Society annual winter meeting will be held at the Hall Hotel, Mayfield.—W. W. Magill, Sec'y.-Treas.

Jan. 2-3—Maryland State Horticultural Society will hold its 49th Annual Meeting in Hagerstown, Md.—A. F. Vierheller, Sec'y.

Jan. 6-7—Western Colorado Horticultural Society will hold the fourth Annual Meeting at the Mesa College Auditorium in Grand Junction, Colo.—W. F. Cherry, Pres.

Jan. 7-9—Massachusetts Fruit Growers' Association Annual Meeting in Worcester, Mass.—Wm. R. Cole, Sec'y.

Jan. 10-11—Utah State Horticultural Society will meet. President J. A. Howell will preside.—A. Stark, Sec'y.

Jan. 13-15—Pennsylvania State Horticultural Society Annual Meeting at the Farm Show Building in Harrisburg, Pa.—J. W. Ruef, Sec'y.

(Continued on page 40)

FARQUHAR IRON AGE YORK, PA.

ORCHARD SPRAYERS

A Size and Type for Every Need

- Ease and economy of operation . . . complete penetration and coverage of foliage are assured when you use Farquhar Iron Age Sprayers and spraying equipment.
- 7 pump sizes . . . the right pump for your sprayer.
- 6 to 40 gallons per minute capacities meet all your needs.
- 500 to 1,000 lbs. per square inch pressure range . . . the exact and constant pressure you require.
- Rugged construction for years of trouble-free operation.
- Simplicity of design for easy lubrication and maintenance.
- Streamlined . . . permits easy passage in rows . . . eliminates twig breakage loss.

FAMOUS IRON AGE PUMP

. . . is totally enclosed with drive gears and bearings running in a bath of oil, assuring long life . . . has an exceptionally high mechanical efficiency, a volumetric displacement efficiency of 99.5 plus.

Write for complete information and catalog today.

Plant and Spray the IRON AGE Way

ROW CROP AND ORCHARD SPRAYERS • AUTOMATIC AND ASSISTED FEED POTATO PLANTERS
VEGETABLE PLANTERS • DUSTERS TRANSPLANTERS • POTATO DIGGERS • WEEDERS

1856 NINETIETH ANNIVERSARY YEAR 1946

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Cutting PERFECTION Plus light weight and long life.

CORONA Professional PRUNERS

NEW CORONA HAWLEY. Heavy duty professional pruner. The handiest, cleanest cutting, precision pruning tool EVER developed. Finest drop forged steel. Polished jaws. Tennessee Hickory handles—steel ring reinforced—put on with 10,000 lbs. pressure so they can't come off! Alloy steel hook. High carbon steel blade. Superior *spring steel stop* (patent applied for) actually takes the jar out of cutting. New bolt which stays tight. Lightest and toughest, easiest and fastest cutting pruner of them all! Will cut up to 2-in. branches. Lengths: 20", 26", 32". Today's improved design at same pre-war price!

CALKINS 8

CALKINS 800

CORONA CALKINS 8 (length 6¾ in.) and 800 (7½ in.) are the same design. Forged from the finest steel, ground, properly tempered and perfectly hand matched. Replaceable blade is carbon steel for hardness and lasting cutting edge. One-hand operated fastener. Peer of all pruners . . . better than the best pre-war imported shears!

SLICE-CUT

CORONA SLICE-CUT (available soon) is Corona's new improved, light-weight, easy cutting pruner with non-metallic handy-grip handles. The easiest working anvil type pruner used. A professional tool at a low price. Length 8½ inches.

OUR HIGHEST QUALITY PRUNERS AT SAME PRE-WAR PRICES!

See Your Dealer or Write
CORONA CLIPPER CO.
CORONA, CALIFORNIA

NUT INSECT CONTROL

(*Continued from page* 17)

nut, butternut and English walnut east of the Rocky Mountains and a similar species attacks English walnut in California. Insofar as walnut and butternut are concerned, apparently little, if any, serious harm is done, but with English walnut it is a different matter. The husk is reduced to a black, mushy mass which stains the shell; but more serious still, the black juice penetrates to and discolors the kernel.

The parent is a fly, somewhat larger and stockier than a house fly. They appear in Ohio in mid-July.

Either lead arsenate or DDT, at the strengths previously given, is recommended for the control of this insect. Proper timing is important since the object sought is to poison the adult flies before they deposit their eggs in the husk.

To determine the proper time, a dozen or so maggoty nuts should be deposited on the surface of the soil beneath a tree when the crop is harvested. Then a screen-wire cage should be placed over the pile with the lower edge buried in the soil 3 or 4 inches. When the flies emerge the following July, the spray should be applied, followed by a second treatment in 10 days. A grower in northern Ohio, Dr. A. F. McQueen, obtained perfect control this past season by following the foregoing procedure, whereas other trees some little distance away were seriously infested.

In California, codling moth, if uncontrolled, does serious harm to English walnuts. Recent work indicates that DDT is particularly well adapted for its control.

The larva of a moth, the pecan or hickory husk worm, *Laspeyresia caryana*, bores into the husks of these nuts. One of the control measures suggested is to collect and destroy during the winter months the old husks in which the larvae hibernate.

Still another class of insects that damage the nuts are several weevils. "Wormy" hickory nuts are of common occurrence. No practical control measure is available. Spraying is of little value. Collecting the fallen nuts before the grubs leave to enter the soil sometimes is suggested, but this is economically unsound because several collections each fall are necessary; also the work must be done on an area basis rather than for single trees.

Insects that Destroy the Wood of Nut Trees

Outstanding in this class of nut pests is the hickory bark beetle, *Scolytus quadrispinosus*, which annually kills many trees. Healthy, vigorous trees rarely suffer. Widespread destruction may follow shifts in land use; as, for example, when a woodland is pastured heavily or is changed to a recreational area subject to heavy traffic. Periods of sustained drouth likewise may bring on an attack.

Chemical control is ineffective for this insect.

Mention might be made also of several other borers of lesser importance; insects that prune the twigs from the trees; and several that bore into the tender terminals of the branches.

Conclusion

Although the present status of the nut industry does not seem to warrant the intensive activity in insect control that is practical in some other lines of horticulture, it is the writer's opinion that, in the future, more attention must be given to that phase of nut husbandry than has been accorded it in the past. I am convinced that light crops, crop failures, and impaired quality are all associated with the devitalizing influence of insect attack. Is it not possible that if a little more attention be given to pest control that some measures which now seem impractical would prove to be of sound, economic value?

Farmers vote 2 to 1 in favor of open type tractor tire treads

NATION-WIDE POLL REVEALS FARMERS' OWN EXPERIENCES WITH TIRES

BALLOTS received from all 48 states in a poll of tractor tire tread preferences show that twice as many farmers prefer open tread tractor tires as prefer other principal types combined.

This is the conclusion of Fact Finders Associates, Inc., of New York City, who conducted the study in order to get a country-wide picture of farmers' actual experiences with tractor tires.

The first question asked was what type tread gives the most traction. Alongside this question were printed pictures of the open type with separate bars, the closed type with connected bars, and the button type. Tabulation of the votes showed 67.7% of all farmers voting in favor of the open tread. Only 26.6% preferred the closed tread for traction and 4.2% the button type. One and one-half per cent had no choice.

This is the picture for the country as a whole. State by state, the vote was almost the same. Some of the heavy tractor farming states, however, such as Minnesota and Wisconsin, showed almost a 75% preference for the open tread.

Returns analyzed by makes of tractors owned showed the same trend. According to the experiences of most farmers, any make tractor operates better on open tread, separate bar tires.

The open tread illustrated on the ballot was originated by B. F. Goodrich 10 years ago. It has been the only type tractor tire tread used by the company since that time. On this tire the bars or cleats each form a separate traction unit. The bars are arranged in pairs to give extra bite and prevent slippage. Because the tread is open and the bars unconnected, mud and trash drop out as the tire rolls. The tread stays clean, unclogged. Traction is improved, work is handled more quickly with less fuel used.

Here are actual comments from farmers as reported by Fact Finders Associates: "The open center cleans better and a clean tread always gives good traction." "I have used all 3 and prefer B. F. Goodrich." "The tread with separate cleats seems to have better cleaning and more bite." "I have watched all different types of tread on the same kind of tractor in the same field. The open center holds best and cleans best." Many farmers said they had tried various makes of tires but liked B. F. Goodrich best because of the extra traction.

The heavy preference, 2 to 1, for the B. F. Goodrich type tread is explained by the experience of farmers who have tried several types of tractor tires on their own farms. Farmers who own several tractors and have used three or four types of tread are strongest in their conviction that the open tread gives the greatest traction.

While supplies are still short in some areas, all B. F. Goodrich dealers are now taking orders for these open tread tires. Many are making immediate deliveries.—*advertisement of The B. F. Goodrich Company, Akron, Ohio.*

NUT TREES FOR SHADE

(*Continued from page* 21)

4 feet from the fence at alternate posts and the wire zig-zagged along the line to create the guards around the trees. Within a few days after planting and completion of the electric guards the trees were mulched to control weeds and conserve soil moisture.

While this experiment has been in effect for only one growing season, the results, to date, indicate that this method is effective in providing protection from livestock. Growth and survival of the trees has been very satisfactory thus far.

The advantages of this method appear to be the rather low cost of labor and materials and ease of installation.

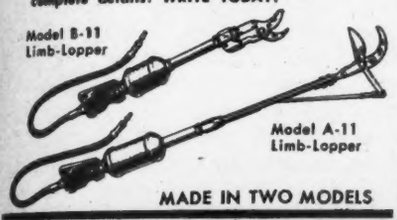
Within the next decade we should be able to determine how the nuts from these seedling trees compare with the parent tree and there should be adequate shade for all classes of livestock on either side of the fence.

MAKE SHORT WORK OF PRUNING JOBS!

Growers report up to six times more pruning per man with the new air-operated Limb-Lopper—the pruning tool that cuts limbs up to 1¼" thick at the press of a trigger!

Made in models for all deciduous and citrus fruit trees, and for grape vines, berries, etc., the Limb-Lopper cuts pruning time 50% and more over tiresome manual operation of ordinary clippers. Small compressors provide air pressure for operating from 1 to 4 Limb-Loppers—ideal for large acreage where pruning is a costly problem.

Send for Bulletin A illustrating and describing the Limb-Lopper, and ask us for complete details. WRITE TODAY.



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TREE GUARDS PROTECT *valuable young* TREES *from Bark-Eaters*

- This chemically impregnated fibre guard snaps on quickly.
- Length—24". Expands to 3½" Diameter.
- Jobbers-Dealers — write for Special Sales Proposal.

LAMINITE PRODUCTS - Canton 5, Ohio

3 in 1 OTTAWA SAW

The World's Fastest.

FELLS TREES, SAWS BIG LOGS, SMALL LOGS, LIMPS

One motor performs all three operations. Furnished with or without attachments shown below. Thousands in use. Make BIG profits in the ever increasing wood business. Pulley for belt work. Fully guaranteed. Low direct-to-user prices. FREE details—write TODAY.

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FRUIT TREES

Planters Grades at Planters Prices. Peach, Apple, Pear, Plum and Prune, Cherry. Write for Prices. Drop a card for Free copy of our catalogue.

CHAMPION NURSERIES

150 MAIN STREET • PERRY, OHIO

STATE NEWS

(*Continued from page 26*)

total average production of 700,000 bu., so they are fairly representative; that's roughly one-third to one-quarter of the State total.

How does McIntosh compare with other varieties?

Here it is: 62% Mc's vs. 38% all others combined.

No comment is made except to say that is a lot of MacIntosh.

The next most interesting point might be that 37 growers said they sold 13% of their crops direct to consumers, and 32 growers sold 16% direct to retailers. Comparing report cards and totaling these two gives a result that these producers dealt directly with consumer outlets on 25% of their volume.

Possible this should be expected in a densely populated area such as Massachusetts but the figure is interesting; perhaps surprising. As many apples sold direct; one way or the other; as were sold on consignment to commission houses.

The other 75% went to two outlets; 50% to jobber-handlers and 25% to commission houses.

A must question: always in the talk when apple men get together is "How many apples do the 'chains' handle?"

Forty-two growers ventured an estimate on this question. These producers were reporting on a total production of 570,000 bu. of which 65,000 went to "direct" sale outlets. Of the other 505,000 the estimate was 49% to chain outlets and 51% to independent outlets.

To summarize:

1. Total production 62% McIntosh, 38% all other varieties.

2. Twenty-five percent sold direct to consumer or retailer.

3. Fifty percent sold through jobber-handlers; twenty-five per cent through commission outlets.

4. Fifty-one per cent handled by independent stores, forty-nine percent by "chains".—*William R. Cole.*

Shell Opens New Agricultural Laboratory

The opening of a new $500,000 agricultural laboratory at Modesto, California, has been announced by the Shell Company as part of their continued effort to improve the materials available to agriculture.

The laboratory will serve as a research institution for developing new ideas, as a proving ground for natural and synthetic products derived from petroleum, and as a clearing house of scientific information where agricultural problems may be presented and solved.

The farm itself is large enough to permit field testing on a commercial scale. Projected plantings include 100 acres of trees and vines of all commercial types and 30 acres of truck crops. The remaining 12 acres of the 142 acre farm are taken up by buildings and roads.

FEWER HANDS... FASTER HANDLING

Stevedore Jr. Power Belt Conveyor makes produce handling easy and rapid. It takes the grunt and fatigue out of lifting in loading, stacking and elevating operations. It gets your produce to the consumer faster and in better condition . . . with less manpower expended.

Lightweight and easy to handle, Stevedore Jr. can be moved about to fit changing needs. Fully adjustable from 18" level to a delivery height of 64", it lifts a 225 pound distributed load at the rate of 50' per minute. Stevedore Jr. plugs in on any standard 110 volt lighting circuit to make light work out of handling your boxes, baskets, crates or bags of produce.

Write for detailed information on how you can use fewer hands and get faster handling. Don't delay, write today!

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Write today

for your new free booklet describing Es-Min-El, the soil mineralizer that makes it possible for you to grow quality fruits and vegetables! Write us now!

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Make Reservations Now

• while there is space available. You will enjoy this modern, Country Club Hotel, with its congenial guests, excellent meals, golf course, swimming pool, and nearby fishing.

Dec. 20 to April 1st, $8 to $16 single, $16 to $24 double. Full American Plan. Write or wire George L. Davis, Manager, Mount Plymouth Hotel, Sorrento, Florida.

MOUNT PLYMOUTH HOTEL

FLORIDA — **SORRENTO, FLORIDA**

KER-O-KIL

WEED BURNER

2000°F. Flame

For burning green weeds, brush, sprouts, also for light blacksmithing, thawing, disinfecting.

Write for Free Circular 12

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Why worry and suffer any longer if we can help you? Try a Brooks Patented Air Cushion. This marvelous appliance for most forms of reducible rupture is GUARANTEED to bring YOU heavenly comfort and security—day and night—at work and at play—or it costs you NOTHING! Thousands happy. Light, neat-fitting. No hard pads or springs. For men, women, and children. Durable, cheap. **Sent on trial** to prove it. Not sold in stores. Beware of imitations. Write for Free Book on Rupture, no-risk trial order plan, and proof of results. All Correspondence Confidential.

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OTTAWA Wood Saw FOR TRACTORS

Fast wood sawing, quickly pays for self. Easily moved while attached. Big blade. *Free details.*

OTTAWA MFG. CO.
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HUNT'S GRAFTING WAXES RODENT REPELLENT, ETC.

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FARMERS WHOLESALE NURSERY

PAUL PATTERSON, Owner

A dependable source for true to name fruit trees. We specialize in commercial accounts, and exercise every care in keeping our varieties straight.

Write for prices.

P.O. Box 65 — Smithville, Tennessee

You Get What You Buy

DISEASES OF NUTS

(*Continued from page* 17)

velops from spores produced on the blighted leaves of the current season. If the leaves are gathered and composted after they drop, this will reduce the amount of infection living over winter, but this practice alone will not give control in a rainy season. Spraying the young foliage as it forms in the spring with a copper fungicide is necessary to prevent infection by the spores produced at that time on the old leaves. Three applications of spray are necessary; the first when the new leaves are about half grown; the second 10 days later; and the third when the leaves are fully developed. Either a 2-2-50 Bordeaux mixture or one of the fixed copper fungicides used in the following mixture are satisfactory: Three pounds fixed copper (based on 25 percent metallic), 3 pounds hydated lime, spreader according to manufacturers recommendation, and 100 gallons of water.

The English and Persian walnuts are susceptible to a bacterial blight which spots the leaves, causes black, sunken lesions on the young twigs, and attacks the husks of the nuts causing them to decay and drop prematurely. The disease is controlled by well-timed, thorough applications of spray. Where English walnuts are grown commercially the spray recommendations of State Agricultural Experiment Stations should be followed. For the grower having only a few trees and where no definite spray schedule has been worked out for local conditions, three applications of 2-2-50 Bordeaux or one of the fixed copper materials should give control. The first application should be made when the terminal leaflets on the new shoots have parted to barely expose the nut-bearing flowers; the second as the male flowers come into bloom; and the third when the nuts are about the size of peas. The use of one pint of summer white oil to 50 gallons of Bordeaux will lessen the danger of foliage injury from the spray.

The branches of butternut are often killed by a fungus die back disease. Diseased branches should be pruned out and severely diseased trees should be removed. Keeping the trees in a vigorous condition by fertilization and preventing defoliation by insects and diseases increases resistance to die back.

Both the black walnut and the butternut are attacked by a canker disease caused by the fungus *Nectria galligena.* Cankered areas appear on both trunk and branches. If trunk cankers are small they may be removed by surgical methods, followed by shellacking the edges of the wound

and coating the open area with a tree wound dressing. Diseased branches should be removed and burned and the trees should be maintained in good vigor.

Hickory

Several fungus leaf-spot and blight diseases occur on hickory foliage which are similar to those described on walnut. These are controlled by copper fungicides applied as directed for the spraying of walnuts.

Some canker diseases of the trunk and branches occasionally occur on hickory and the treatment is the same as for Nectria canker of walnut.

Hazelnut and Filbert

Leaf-spot diseases may attack the foliage of hazelnut and filbert. Spraying with a fixed copper fungicide when the leaves are full grown and again two weeks later will give control.

A canker disease, caused by the fungus *Cryptosporella anomala*, occasionally kills branches of the cultivated hazels. Cutting out the diseased branches is the only only practical control measure.

BLACK WALNUTS IN TVA

(*Continued from page 22*)

non-crop land averaged 360 per 1000 acres in the east and 160 in the west. However, trees in the west bear slightly heavier crops than trees of the same diameter in the east. The total walnut crop in the Tennessee Valley averages nearly 25 million pounds annually.

Farmers and landowners are harvesting about half of the total crop. They market nearly 10 million pounds of dry, hulled walnuts to modern cracking plants serving the region, besides cracking out considerable quantities of kernels for sale to pasteurizing plants or for home use.

Farmers are being familiarized with improved black walnut by small plantings of Thomas walnut trees which are distributed through the extension services. To date, demonstration plantings have been established on 3,328 farms in 92 Tennessee Valley counties. Farmers are showing aroused interest in growing black walnut bearing nuts of superior quality. In view of the demand for grafted black walnut, increased production by commercial nurseries in the Tennessee Valley is looked for. In future years, as additional plantings of improved black walnut come into bearing, the nut crops should find a favored market. This production will augment that of the common black walnut harvest and assure a stabilized local industry in this region.

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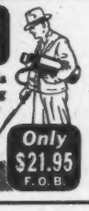

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Joe Marsh

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MEETINGS

(*Continued from page 35*)

Jan. 14-15—The New Hampshire Horticultural Society will hold its Annual Meeting and Trade Exhibit in the Hotel Carpenter, Manchester.—D. R. Batchelder, Sec'y.

Jan. 15-17—New York State Horticultural Society will hold its 92nd Annual Meeting in Rochester. The Eastern Meeting will be at Kingston on Jan. 29-31.—T. E. LaMont, Assoc. Sec'y.

Feb. 26-28—Centennial Meeting of the Ohio State Horticultural Society. Meeting at Deshler-Wallick Hotel in Columbus. A program is planned to celebrate the Centennial.—Frank H. Beach, Sec'y.

I PLANT NUT TREES

(*Continued from page* 15)

ities, from the best parents, a sort of gamble in which the percentage is in favor of the gambler—which is, as you should know, unusual.

One utterly complete failure must be noted. I shall never again plant a black walnut seed or tree in any but good soil. Even the best inheritance cannot prevail against hardpan or wornout soil.

Most of you are chiefly interested in grafted or budded trees, and this is as it should be. Where sure results and the best possible nuts are the aim, one would be utterly foolish to plant a seedling. Upon the other hand, where plantings are made in great quantities, as is the case with foresters, state or federal agencies, colleges and other institutions, and with occasional individuals like myself who find their greatest interest in this particular beneficent gamble, I think it is fairly well demonstrated that the percentage of success *can* be turned in favor of the planter by intelligent selection.

But where can the best seed be found? The answer is plain. The best possible source is in existing plantations of named, proven varieties. (For the addresses of nurserymen and large growers of named varieties, write to Miss Mildred Jones, Lancaster, Pa., Secretary of the Northern Nut Growers' Association.)

Every nut produced by planters of orchards of the best named varieties should be in active demand by state and national agencies for their own plantings, and the seedlings from them should be available for the widest distribution to the public. This urgent demand for better seed will make existing plantations of good varieties more profitable and will fill our forests and farms with far better trees.

New Apple Picking Record?

What is believed to be a new record in the number of apples picked in one day was established in October at Orkil Farms in West Simsbury, when Henry Cylkowski, of Simsbury, picked 150 bushels of Baldwin apples.

This was run-of-tree picking which meant that he had to use a ladder to pick a high percentage of the 150 bushels.

Cylkowski is now on terminal leave from the Army.

His record beats one of 142 bushels made last year in a similar nine hour day by John Flamig of West Simsbury.

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A powerful story of farming on poor overworked and eroded soil. The tragedy of creatures of habit and custom who refused to accept modern soil management and to their own ultimate destruction is the theme of this inspiring, and interesting book. Joe Cocannouer, the author, is the Father of our present system of teaching vocational agriculture in our public schools. Many families which the author describes have their counterparts in every agricultural community. No one can read this book without becoming a better farmer and converting the bitter vintage of grapes into sound and mellow fruit.

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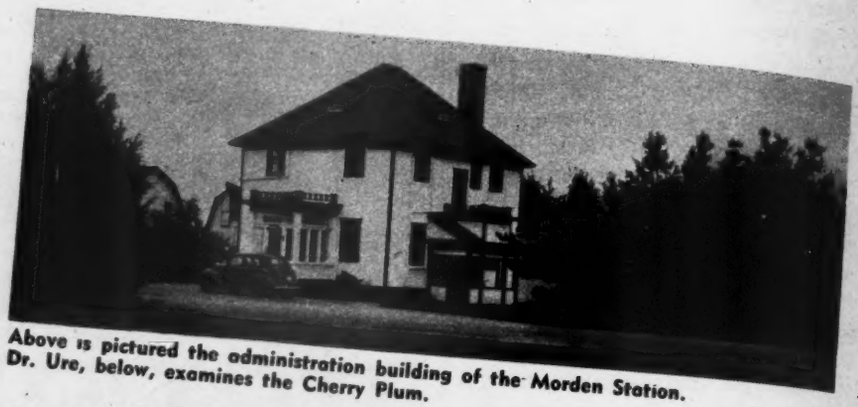
AMERICAN FRUIT GROWER 1370 Ontario Street Cleveland 13, Ohio

Ramblings OF A HORTICULTURIST

Prairie Horticulture

ARMISTICE DAY, 1942, is still remembered with fear and trepidation by fruit growers of the Northern Great Plains. It was an ideal fall then and as far as could be discerned there was to be no change in the weather. But on November 11 the westerly winds bore down cruelly cold upon the tender leaved plants. So sudden and abrupt was the weather's mutiny against the balmy autumn that overnight the mercury dropped from a warm 70 and 80 degrees to sub-freezing temperatures, and on the second day the mercury hugged close to 17 degrees.

No plant was sufficiently hardy to withstand the ordeal, consequently trees, vines and bushes succumbed by the tens of thousands. In the Great Plains section of Manitoba most of the apple trees were killed and all other fruits suffered heavy losses.



Above is pictured the administration building of the Morden Station. Dr. Ure, below, examines the Cherry Plum.

I preface today's little ramble with this recollection because it so strikingly illustrates a paramount need in northern fruit growing — hardy fruits. The severe losses of 1942 more than any other factor has stimulated research in breeding hardy varieties of fruits for the northern climes.

To get some idea of the work in progress I recently paid a visit to the Dominion Experiment Station, Morden, Manitoba. It is one of the largest fruit breeding farms in Canada.

No doubt you wonder why there should be so much emphasis upon fruit breeding in a country which is noted for grain and not for its fruit. Perhaps that is just the point, there is not enough fruit grown locally to adequately nourish the peoples of the Plains, and they do not buy enough.

In light of this fact, Mr. C. R. Ure, head of the fruit breeding program at the Morden Station described the procedure and objectives of the research. The plan which has been in practice during recent years is to introduce new fruits and develop new varieties which will withstand the rigors of cold winters and the heat and drought of prairie summers. The emphasis is upon varieties of fruits for home use, not necessarily for commercial planting. No doubt our friendly northern neighbors think something like this, —the more fruit we can grow, the more our people will eat and the healthier and happier they will be.

The Morden Station spreads over an entire section of land, 640 acres. Of this, 240 acres are devoted to experimental work in all branches of horticulture, the largest division, 137 acres, being spent to fruits. It is the main station of the Canadian Prairie and at present is cooperating with 27 other Dominion Experiment Stations in a gigantic fruit breeding program. Some 80,000 crosses of fruits are made each year at Morden and the future promises an even greater number to meet the requirements of the expanding breeding program.

Of particular interest was the fact that apricots are grown successfully on this northern prairie. Most of us think of California, the land of warmth and sunshine, when we mention the apricot. We can't imagine this delicate fruit struggling for existence through temperatures far below zero.

Scout is one of the most productive and hardiest of apricot varieties yet produced by the Dominion Station at Morden. Its quality is likewise of the finest sort. It is a seedling of the Manchurian Apricot introduced from northern Manchuria a number of years ago. A more recent variety, yet known by number, M604, may outrank Scout, one of its parents.

Last month I mentioned there was a fruit which stood out so prominently this year in Minnesota and bore a fine crop of fruit. It is the so-called Cherry-Plum, a fruit resulting from crosses between plum varieties and the Sand Cherry, a rather sprawling tree native to the Canadian prairie. Dura, one of the most promising varieties of the cherry-plum hybrids produced by the Morden Station, has proven perfectly hardy and productive 600 miles north of the border in Saskatchewan. Sapa is the most prominent variety in Minnesota. The fruits, about an inch in diameter, are excellent for jams and jellies and are even relished for dessert.

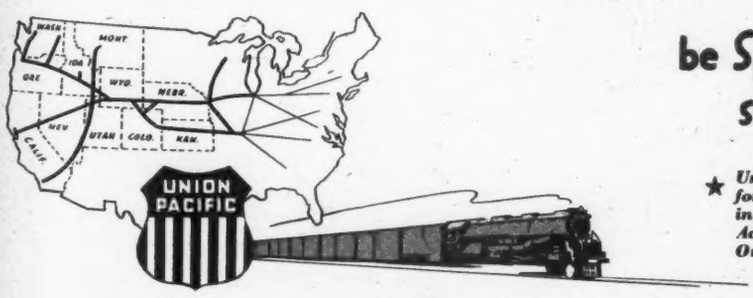
A MESSAGE TO THE FRUIT INDUSTRY

More POWER to You

Three great dams, harnessing the natural force of the Colorado and Columbia Rivers, provide tremendous industrial power.

Giants of the rails, the Union Pacific "Big Boy" locomotives provide freight transportation power over the Strategic Middle Route.

Power, light, and efficient transportation . . . combined with a wealth of raw materials and adequate "growing space" . . . offer unusual opportunities for industry in the Union Pacific West.

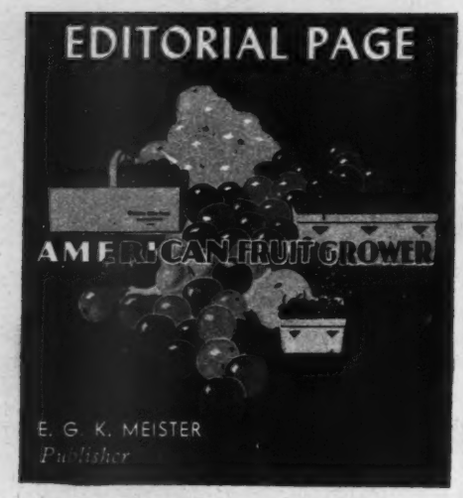


be Specific – say "Union Pacific"

★ *Union Pacific will gladly furnish confidential information regarding available industrial sites having trackage facilities in the territory it serves. Address Industrial Dept., Union Pacific Railroad, Omaha 2, Nebraska.*

UNION PACIFIC RAILROAD

The Strategic Middle Route



Successful Nut Growing

THE NUT TREE is a part of the inheritance of American youth. Most of us have gone nutting at one time or another, and come home with sacks overflowing with all varieties of wild nuts. We all recall the fond care the nuts received in drying—in the attic, on the roof of a shed, or in the back yard.

Many a boy has spent part of a summer day lying in the shade of a walnut tree, or perched in the branches, surveying the countryside in the manner of a lord and master.

Most of us have forgotten the walnut tree and the hickory limb as we have grown older, but a small core of men and women have unselfishly taken to themselves the task of developing American nut growing into a successful industry.

They are the members of the nut growers' associations, to whom nut growing is more than a business or a livelihood—it is a paramount interest in life.

To them this issue is dedicated in a sincere hope that their efforts will be more successful each year, and that they will succeed in bringing the American nut industry into the prominent position it so well deserves.

The Price of Research

NOT MANY of us have the training, the patience or the talent to engage in research even in our own behalf. We depend upon men of science who are employed in federal, state and private institutions to solve our problems and tell us how to make a living from the soil. Their knowledge and talent becomes the property of all who care to avail themselves therefrom.

Agricultural research pays big dividends to both the nation and those engaged in agriculture. It does not pay dividends to the men of science who devote their lives to public welfare.

In the new program of agricultural research with an appropriation of nine and a half million dollars, thought should be given to the welfare of the workers and a scale of compensation established which would be commensurate with the skill and talent of these scientists. Since it is not ethical for men of science to profit as a result of their labors, certainly those that benefit, and they include all of the people, should exercise their influence in behalf of adequate compensation for our agricultural scientists.

Frost Protection

IF RECENT Michigan experiments with infra-red rays live up to their early promise, the day of the smudge pot may be on the decline and a new era in frost protection not far away.

Sending a ray through the air like a radio beam is a lot simpler and more effective than heating the entire atmosphere over and around an orchard, particularly on a windy day. The infra-red ray strikes the plant and it alone absorbs its warmth. The air is not heated and remains cold while the plant is warm.

Dr. E. D. Witman, Research Chemist of Ohio State University, suggests that since copper compounds readily absorb infra-red rays it might therefore be theorized that absorption by the plant can probably be increased by spraying with Bordeaux or some other copper compound when frost threatens plants. It is conjectured that such a spray may increase the area of effectiveness of the infra-red ray machine.

Heating by unseen rays sounds mystical but has been successfully demonstrated by Michigan scientists and we hope that soon growers will see advertisements in AMERICAN FRUIT GROWER offering infra-red ray machines for frost protection. The miracle of science has no limitations.

Mineral-rated Fruit

HOW WOULD my fruit rate if it were tested for mineral content?

That is the question every alert, market-wise grower will do well to consider today as he faces the problem of marketing his produce.

Fruit high in mineral content can be advertised as such and is apt to be a better seller on the market. And such quality fruit, both in content and appearance, is grown only in soil which is itself rich in mineral content, for it is here that the fruit gathers the minerals which are passed along to the consumer.

It is true plants do perform some near miracles in their development, but they simply cannot extract from a soil minerals that are no longer there.

The grower owes it to himself, and to his consumers as well, to make certain that his fruits contain the minerals needed for a well balanced diet.

Order Chemicals Early

"ORDER EARLY!" is the timely advice of the Agricultural Insecticide and Fungicide Association.

Because of many factors beyond the control of the chemical industry, insecticides and fungicides may be in shorter supply during 1947 than any of the war years.

Early determination of a spray program and early ordering are essential if manufacturers are to efficiently service the fruit industry. With many new spray materials holding much interest, manufacturers must know early on which chemical to concentrate production.

Here is the outlook on basic materials:

Copper production is improving but not yet equal to a year ago.

A raw lead demand of 80,000 tons a month is reported with domestic mine production of 25,000 to 30,000 tons and total imports limited by the government to about 8000 tons.

Eight million pounds of rotenone is expected from Peru, the only source of rotenone. Shipping strikes have delayed seasonal arrivals and the situation is further complicated by a trade agreement with Peru which expires next May and on which hinges that country's desire to continue shipping.

Cryolite stocks are lowest on record.

Nicotine supplies should equal last year—not enough to meet demand.

Pyrethrum stocks should be adequate.

Sulfur outlook is good.

Chlorine for the manufacture of DDT and other new organics such as 2-4D, and hexachlorocyclohexane is scarce, but it is expected DDT production can equal last year's.

Growers can protect themselves by placing their orders for insecticides, fungicides, fumigants and other combinations of chemicals now. To wait may be disastrous.

Merry Christmas Happy New Year

TWINKLING TREES . . . . . Christmas carols . . . . . merry church bells pealing . . . . . soft snow and dancing children . . . . . Peace on earth, good will towards men—all weave the magic spell of the Christmas season.

To each of our readers we send this Christmas card: Our very best wishes for a Happy Yuletide Season.

Serving the Fruit Growers of the Nation

ANNUAL INDEX TO CONTENTS AMERICAN FRUIT GROWER

JANUARY THROUGH DECEMBER, 1946

Monthly from 1881 through 1946

Once again the AMERICAN FRUIT GROWER is pleased to offer its readers the annual index. All material appearing in the 1946 publications is listed here.

This index should be particularly valuable to schools, colleges and experiment stations, as well as other readers, in referring to material appearing in the various issues, since the authors of the many interesting articles are recognized authorities in all phases of fruit growing, and their articles include the latest developments in horticultural science.

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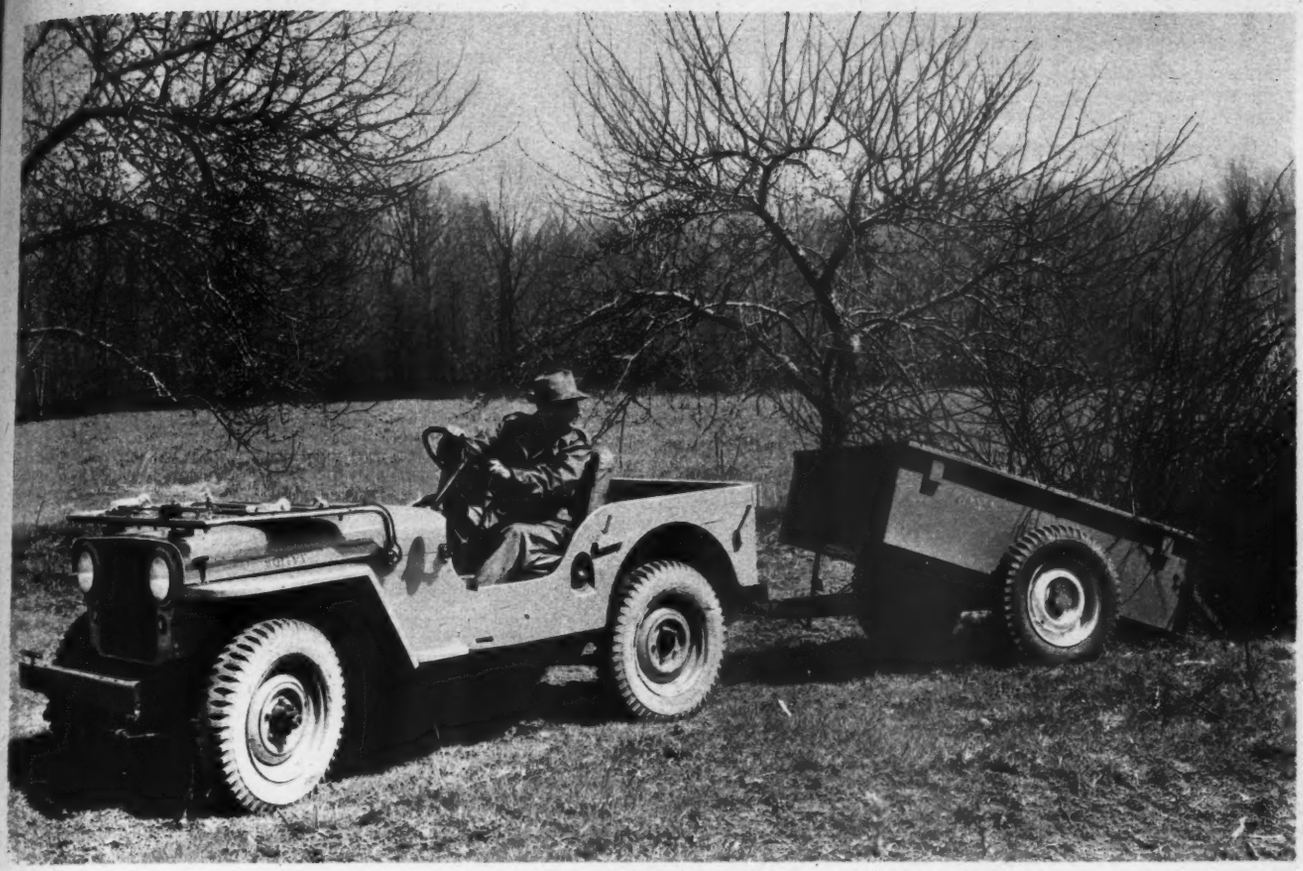

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